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COMMODORE WORLD

Issue 17
October/November 1996
$4.95 U.S.

THE NEWS MAGAZINE FOR COMMODORE 64 & 128 USERS

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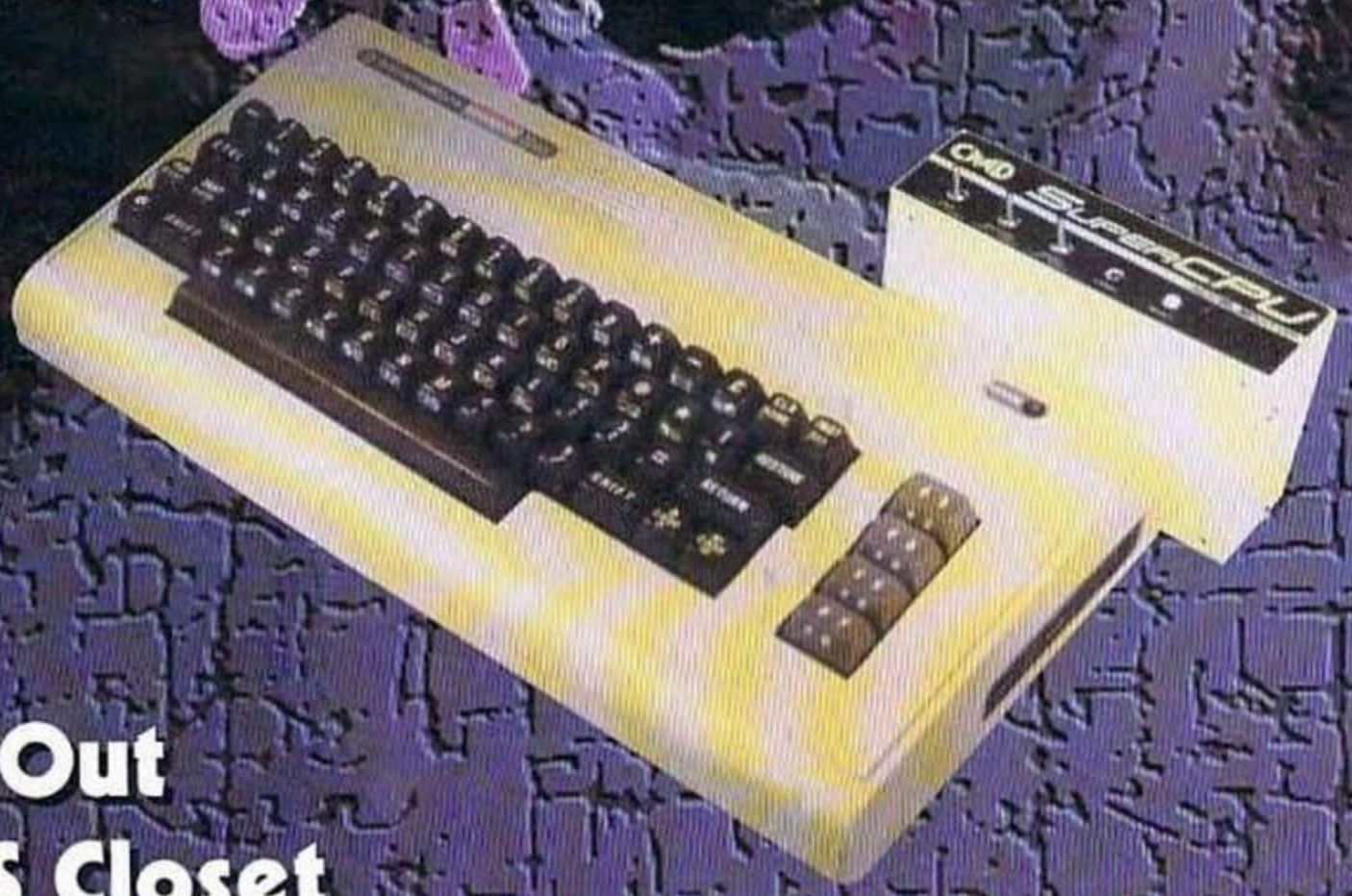

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FROM THE EDITOR

Have a Super Holiday Season!

As we enter the holiday season and draw close to the end of 1996, it seems fitting that we do so with an issue that shows just how far we've come with our Commodore computers. The world around us continues to change, and with it, so we must also adapt to the times. Yet, we've discovered that this doesn't mean we need to abandon the friendly platform we've all grown to know and enjoy over the many years. Indeed, it seems that a good many users who left the Commodore community are now rediscovering their roots. The proof of this can be seen in many places—on the World Wide Web, in various Usenet newsgroups, and even in newspaper and magazine articles.

Why is this? What's the driving force that brings users back to using an 'obsolete' computing platform? Of course, the simple answer is nostalgia. But I think we need to define that in more meaningful terms. As people grow older, they remember with fondness simpler times. They recall actually enjoying their computer, as opposed to the daily grind at work using the latest technology.

I've seen this realization up close several times, often with visiting salespeople. As I speak with a new sales agent who has come to explain his company's latest plan or product, the conversation usually begins with me explaining what it is our company does. It's natural for any new agent to inquire as to the nature of your buisness so that he can better determine how his company's offerings can provide potential customers with something they need. As I explain what our company does, eyebrows rise, smiles come quickly, and comments like, "Really? I used to have one of those!" are heard. And from time to time, an agent will admit, "I still have one of those in my closet!"

As a promoter of Commodore use, comments like the latter are my cue to hand over a copy of the latest issue of Commodore World, pull a game or two from our shelves, and comment that it's okay to enjoy the company of an old friend now and then.

Now, while nostalgia may be the trigger for some folks, plain old simplicity is the key for others. Many users to whom I have spoken, and others whose messages I have read online, have tried modern 'Wintel' boxes and found them to be too complex, too unfamiliar, or just too impersonal.

Lately though, I've seen one other reason: CMD's latest major product realease, the SuperCPU, has begun to convince some users that there's still some life left in the old gal after all! No, they aren't coming back in droves yet, but still, it's a positive sign.

Having recently joined the SuperCPU internet mailing list, which seems to be frequented mostly by programmers, I've noticed that the excitement level is running deep there as well—in fact, much is being said about new development work targeted for SuperCPU users. While I'd consider it to be too early to address specific projects or releases, a lot of current activity centers around new tools to allow programmers to create more powerful applications. I view this as a very positive step, one which will entice more programmers to become involved. And as we all know, if more programmers get involved, it sets up a chain reaction: more software becomes available, generating excitement, which leads to more users.

Given these developments, it seems fitting that this issue of Commodore World is devoted to providing users with a good overview of how the SuperCPU works with present applications. We're also using this issue's Assembly Line to preview the launch of our new column for SuperCPU developers: 816 Beat. We strongly believe that the future of Commodore computing is tied directly to the power of the SuperCPU, and what it can offer as an incentive to programmers and users alike!

Doug Cotton
-Editor

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LOADSTAR® MONTHLY

LOADSTAR is a monthly "magazine on disk" for the Commodore 64/128. Subscribers receive two 1541 disks (or one 1581 disk) in their mailbox every month packed with news, articles and programs. These non-PD, high-quality programs are written by the best home-based programmers in the field and edited by the crack LOADSTAR team of Fender Tucker and Jeff Jones. Subscription prices are at an all-time low of $69.95 for a 12-month subscription, or $19.95 for a three-month subscription. You may also elect to subscribe "by the month," where we charge your credit card $7.95 for each issue after it's shipped. We also offer the long line of standalone products below.

✔ NEW Games Disk! **The Compleat Jon:** 11 Games! The whole gamut of gaming is covered here: artificial intelligence, role-playing, mazes, fantasy, science fiction, education and even non-violence (which was a radical concept in its time). These eleven games are among the best ever published on LOADSTAR. Listed on the menu in chronological order, so you can see how Jon's style changed as the years rolled by. **1581 disk 0021D3 $20. 1541 disk #0038D5 $20**

✔ NEW Puzzle disk! **The Compleat Crossword:** Every crossword puzzle published in Puzzle Page in one huge collection! 220 puzzles! It uses Barbara Schulak's CRUCIVERBALIST program to present the puzzles and allows you to "mark" a puzzle when it's solved so that you know which you've solved and which you haven't yet. Each 1541 disk contains 110 puzzles. **1581 Disk #0020D3 $20. Disk 1 (1541) #0036D5 $10.Disk 2 (1541) #0037D5 $10**

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PS Graphics! **Compleat PS Vol. 1** (The Print Shop by Broderbund or Printmaster required). Over 1300 artistic and never before published PRINT SHOP images. Scan through the many PRINT SHOP images sequentially, by name, or by group number. Press a key and save the graphic you want in 2-block, 3-block and even PRINTMASTER graphic files! All that plus a printed guide! Each volume is $20.00. **Vol. 1: C-64/128 3.5-inch disk item #0001d3. 5.25-inch disks item #0009d5. Vol. 2 (graphics from past LS issues): C-64/128 3.5-inch disk item #0002d3. 5.25-inch disks item #0010d5.**

GEOS Clipart

LOADSTAR presents the biggest Geos collection of clip art and fonts ever offered at one time. All of the Geos art that's ever appeared on LOADSTAR, as well as some great files from Geos fanatic Dick Estel, are available on twenty 5.25 inch disks or eight 3.5 inch disks. Most of this has never been seen before! Use these graphics in your GeoPaint, GeoWrite and GeoPublish documents or convert to FGM with FGM utilities. Spiff up your GeoFAX documents with the appropriate graphic -- every time! Prices are $20 for any two 3.5 inch disks, or any five 5.25 inch disks. You can purchase the whole collection for $75 for either version. Call LOADSTAR toll-free at 1-800-594-3370 or 1-318-221-8718 to order by credit card. Or send check or money order and specify (by LG number) which disks you want.

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Disk 05 - FONTS: More than 30 fonts from past issues of LOADSTAR, plus articles (in geoWrite format) on creating fonts. Also two ready-made headers for use with your own documents, one a picture of a mail truck; the other reading FROM THE DESK OF **#0016D5**

Disk 06, Disk 07, and **Disk 08** - geoPaint and Photo Album files with the great clip artwork featured on past LOADSTARS - Includes GeoCurmudgeon, Anamalia I and II, Australian Animals, Valentine art and many more **#0017D5, #0018D5, #0019D5**

Disk 09 - GOODYKOONTZ FILES - Jasper Goodykoontz, born in Indiana in 1855, produced Goodykoontz's Perpetual Calendar and General Reference Manual (A Book for the Millions). This disk includes scans from the book of a wide array of subjects -- Gestures and Attitudes, Poultry, Craniology, and more. **#0020D5**

Disk 10 - OLD WEST: Scanned Artwork from Dick Estel's FRD Software - mostly woodcut style art of the old west, gold rush days and pioneer scenes. **#0021D5**

Disk 11: J. Neely Art/Animals: Jennifer Neely works with a wide variety of subject matter and materials. Disk contains some of her favorites, scanned into geoPaint format. Side 2 is a collection of scanned artwork of animals from FRD Software **#0022D5**

Disk 12 - HOLIDAY: Artwork for New Years, Valentine's, St. Patrick's Day, Halloween, Thanksgiving and Christmas **#0023D5**

Disk 13 - PEOPLE/FACES: Scenes of people and faces from FRD Software **#0024D5**

Disk 14 - FRD CLASSICS: Dick's choice of the best of the FRD collection **#0025D5**

Disk 15 - DINOS/CLASSICS: Dinosaurs and other prehistoric beasts, as well as more first choice artwork from FRD. **#0026D5**

Disk 16 - SPORTS/MISC: Dozens of sports-related clips **#0027D5**

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Disk 18 -MUSIC & MORE SCHOOL CLIPS #0029D5

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Disk 4: Equals 9, 10, 11A #0012D3
Disk 5: Equals 12, 13, 11B #0013D3
Disk 6: Equivalent of Disks 14, 15 and some bonus files not on 5.25" disks **#0014D3**
Disk 7: Sports, Office and school, Music #015D3
Disk 8: Music, Holiday and Seasonal #016D3

For your convenience, GeoViewer is included on each volume. GEOS 2.0 is suggested.

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Diskfulla Card Games! **The Compleat Maurice:** A compilation of 26 solitaire card games written by Maurice Jones, the acknowledged master of card game simulations for the C-64/128. There's even a brand new, never before published game called Boomerang. **Two 5.25 inch disks #0007D5 or one 3.5 inch disk #0007D3. $20.00 postage paid!**

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BACKTALK

LETTERS AND QUESTIONS FROM OUR READERS

Dear BACKTALK:

I am looking for a source of Commodore spare parts. Can you help me? Parts or machines would be fine.

Thanks,
M. Bryant

There are two main US sources for Commodore repair parts: Kasara Micro Systems (800-248-2983, 803-681-5511) and Paxtron Corporation (800-595-5534, 800-815-3241, 888-PAXTRON, 914-578-6522). For complete systems, Commodore Country (817-295-7658), Creative Micro Designs (800-638-3263, 413-525-0023) and Tech Star (206-251-9040) are the main sources in the US, though Paxtron occasionally has some systems in stock. In Canada, JP Products By Mail (see their ad for address) is the only hardware source we're aware of. We currently do not have good information on sources abroad, but we're trying to compile that information now.

Dear BACKTALK:

I was recently given a commodore 64. I am looking for the manual for it. Can you help?

P. Pate

While the manuals are all generally out of print, many of the sources that advertise in our pages carry used manuals on an 'as available' basis. At the time of this response, Creative Micro Designs (800-638-3263, 413-525-0023) definitely does have a large supply of used manuals in stock for a number of Commodore products.

Dear BACKTALK:

I am looking for a magazine that supports the Commodore 64 emulators that run on the IBM-PC.

Does Commodore World happen to support these emulators?

J. Cook

Commodore World does not presently provide specific support for Commodore emulators, nor are there any plans to do so in the future. We're unaware of any magazine that provides such support.

In our own case, we don't view the emulators as Commodore products. They may run the same programs, once these have been either 'ported over' or if you attach a Commodore drive (when supported); but configuration problems, and any other considerations that we wouldn't already normally address in our publication are things which are generally unique to either the emulators themselves, or to the platform they are being operated on. These are decidedly not Commodore issues, and are therefore not within the scope of our publication.

Dear BACKTALK:

Is there some kind of adapter that I can use to hook up and run my old Panasonic 1124i printer on a really nice Commodore 64 that I just picked up?

Thank You,
P. Bonett

Certainly. The type of device you're referring to is a "printer interface," and while a number of companies made these in past years for hooking up standard printers to Commodore computers, only one is still made today: the Micrographix MW-350. This particular interface is available from two sources that we're aware of: Creative Micro Designs (800-638-3263, 413-525-0023) and Software Support International (800-356-1179, 360-695-1393).

Dear BACKTALK

I purchased a Geoworks Quick Start Program. I sent in the registration, as well as on order for the instructional video, to the addresses provided. Both came back "Forwarding Order Expired."

I also tried to write a letter to TimeWorks about software. This letter also came back with same results. Do you know the proper addresses? I need to send these letters in, and I would appreciate any help you may give.

Sincerely Yours,
D. James

I'm sorry to say that TimeWorks is no longer in business, so you're not going have any luck with contacting them. As for Geoworks, they no longer provide any support for any of the consumer products they once sold. However, while their Commodore GEOS product line is now handled by Creative Micro Designs, another company, Universal Software Interactive (USI) in Canada has taken over the company's MS-DOS/Windows product line. You can contact USI at:

Universal Software Interactive
P.O. Box 965
Pointe-Claire, P.Q. H9R 4R6
Canada
(514) 633-9495

Dear BACKTALK,

Who said Commodore is dead? Here's part of an advertisement for a file shredder sold by a chain store here in Germany.

This would obviously be one of the products produced by the German company ESCOM since taking over the Commodore name. Maybe they should change it to ESCOMmodore?

(o. Abb.)
Commodore AV-250, Aktenvernichter
99,-
Commodore AV-800, Aktenvernichter Cross-Cut, zerkleinert bis zu 6 Seiten Papier in Partikel von 4 x 22 mm, entnehmbarer Papierkorb, autom. Start-/Stoppfunktion
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COMMODORE WORLD

Sweepstakes Winners

Grand Prize Winner:

Choice of a Commodore C-65 computer or 1 MB SuperCPU

Paul Long
W. Newton, PA #8816

Second Place Winners:

SuperCPU Accelerator

Robert H. Arthur, Happy Vally, S. Australia #8444
Cal Jorgenson, Oakland, CA #8779

Third Place Winners:

$10 CMD Gift Certificates

Ernie Taylor, Laurieton, NSW Australia #8127
David Goerlitz, New Albany, IN #7868
Bud Flint, Vale, OR #8855
Dr. Herbert, Milton, MA #7734
Charles Dilling, Palm Desert, CA #7906
Royal Jaynes, Eugene, OR #8495
Robert Manley, Reese, MI #9012
Marcy Kessler, Rochester, NY #8091
Howard Finn, Greenville, RI #7773
Gary G. Critiser, Battle Creek, MI #8405
Gerald Banta, Clovis, CA #7755
Thomas H. Barkley, Interlocken, PA #7929

Winners were selected randomly using a Commodore 64 computer!
To claim prize, contact CMD at 1-800-638-3263 or (413) 525-0023

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COMMODORE TRIVIA

by Jim Brain

Welcome to another edition of Commodore Trivia. As many of you may know, these trivia questions and answers have been donated by me to the Commodore community at large. Unlike other articles in *Commodore World*, these trivia questions have been placed in the public domain. I ask only that the trivia questions remain intact and unchanged, and that my name and address appear somewhere so users can contact me. The trivia is also used for a contest I run on the Internet; contact me at the included address for more information. Because curiosity has the best of me, I always welcome a note or postcard detailing where the trivia goes. I also welcome new questions—provided they come with the answers. Enjoy!

Jim Brain
Brain Innovations, Inc.
10710 Bruhn Ave
Bennington, NE 68007
j.brain@ieee.org

COMMODORE TRIVIA #16 QUESTIONS

$0F0 What size matrix of pixels comprises a character on a PET 2001 computer?

$0F1 How many bytes did the opening screen on a CBM 4016 show as available for use by BASIC?

$0F2 The character set that produces uppercase letters on unshifted keys is the _____ character set.

$0F3 The character set that produces lowercase letters on unshifted keys is the _____ character set.

$0F4 To get to the set mentioned in $F2, what character code would be printed to the screen?

$0F5 What character code would one print to the screen to invoke the chararacter set in $F3?

$0F6 If one does LIST 60-100, will line 100 get "listed"?

$0F7 The abbreviation for the BASIC 4.0 command "COLLECT" is _____.

$0F8 When you use a subscripted variable in BASIC, how many elements are created by default if no DIM statement is issued?

$0F9 How large is the keyboard buffer in CBM computers?

$0FA On the Commodore 1581, how large is a physical sector in bytes?

$0FB You'll find BASIC 3.5 on the _____ line of CBM computers.

$0FC On the Commodore 1351 mouse, what registers in the Commodore computer would the X and Y proportional information be read from?

$0FD What is the maximum size of a sequential file on a 1581 drive?

$0FE What flaw exists in the early Commodore 1670 modems?

$0FF What is the model number of the first modem for the VIC and C64?

COMMODORE TRIVIA #15 ANSWERS

$0E0 (George Page, a noted authority on CBM Drives, indicated that Commodore made this a tough question to answer.) By the time the 1541C was introduced, Commodore threw a number of drives together and called them 1541Cs. The theoretical 1541C exhibited the following features: No head banging, and other problems fixed by modified ROMs. Case color matches C64C and C128 computers.

$0E1 Simple answer: Most likely, the screen clears and the word READY is printed at screen top. This is the behavior seen when pressing RUN-STOP/RESTORE. Alternately, nothing could happen, or the computer could lock up.
Involved answer: There is a bug in BASIC 2.0. Easily fixed, but destined to live life immortal. The bug is in the PETSCII number to binary conversion routine at $a69b (LINGET). The routine basically reads in a character from the line, multiplies a partial result by 10 and adds the new character to the partial result. Here is a code snippet:

```
a96a    rts
a96b    ldx #$00  ; zero out partial
                  ; result
a96d    stx $14
a96f    stx $15
a971    bcs $a96a ; not a number,
                  ; return
a973    sbc #$2f  ; PETSCII to binary
a975    sta $07
a977    lda $15   ; get hi byte or
                  ; partial result
a979    sta $22
a97b    cmp #$19  ; partial > 6399
a97d    bcs $a953 ; yes, goto error
a97f    lda $14   ; load lo byte of
                  ; result
a981    asl       ; lo*2
a982    rol $22   ; hi*2 + c
a984    asl       ; lo*2
a985    rol $22   ; hi*2 + c
a987    adc $14   ; complete lo*5
a989    sta $14
a98b    lda $22
a98d    adc $15   ; complete hi*5
a98f    sta $15
a991    asl $14   ; lo*2 complete lo*10
a993    rol $15   ; hi*2 complete hi*10
a995    lda $14
a997    adc $07   ; add new char
a999    sta $14
a99b    bcc $a99f ; did lo overflow?
```


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```
a99d    inc $15   ; yes, inc hi
a99f    jsr $0073 ; get next char
a9a2    jmp $a971 ; go through it again.
```

The problem is at $a97d. when the partial result is greater than 6399, (if partial > 6399, then new partial result will be over 63999) the routine needs to get to $af08 to print an error, but can't due to branch restrictions. However, a branch that will get there is in the preceding function, which handles the ON GOTO/GOSUB keywords ($a94b, ONGOTO). So, the BASIC writers just branched to the code in ONGOTO; specifically $a953:

```
a94b    jsr $b79e
a94e    pha
a94f    cmp #$8d  ; is the keyword GOSUB
                  ; ($8d)
a951    beq $a957 ; yes
a953    cmp #$89  ; is the keyword GOTO
                  ; ($89)
a955    bne $a8e8 ; no, print SYNTAX
                  ; ERROR.
a957    ...       ; handle ON GOTO/GOSUB
```

This code is checking to make sure the ON (var) is followed with a GOTO or GOSUB keyword. The LINGET error handler branches to $a953, which compares.A (which holds hi byte of partial result) to $89. Normally, this fails, and the normal SYNTAX ERROR code is reached through the branch to $a8e8. However, for partial results of the form $89XX, the check succeeds, and BASIC tries to execute an ON GOTO/GOSUB call. By the way, it is no coincidence that this error occurs on 35072121, since one of the partial results is $8900 (hi byte is $89). In fact, 350721 will achieve the same result. If the check succeeds, the code limps along until $a96a:

```
a969    pla       ; complement to $a94e
a96a    rts       ; return
```

But we never executed $a94e, the push, so the stack is now messed up. Since the stack held $9e, $79, $a5 before the PLA, (The stack could hold other values, but I always saw these) the RTS gets address $a579 to return to, which usually holds a BRK opcode. The break handler is invoked, and the screen clears with the READY. at the top.

Now, the BASIC 2.0 authors were justified in reusing the error handler code in ONGOTO for LINGET, but they calculated the branch offset wrong, according to my tests. If you have the LINGET error handler branch to $a955, all these troubles disappear. You can verify this procedure with the following BASIC program on a 64:

```
10 for t=57344 to 65535:poket,peek(t):next
20 for t=40960 to 49151:poket,peek(t):next
30 poke 43390, 214
40 poke 1, peek(1) and 254
```

Just to be complete, this error occurs when a 6 digit or greater line number is entered and the first 6 digits indicate a number in the range 35072-35327 ($8900-$89ff). Also, it appears the error occurs on the VIC-20, but I didn't completely verify it. It would be interesting to note if the error is found on all version of CBM BASIC. Whew, what a mouthful.

$0E2) *a* is the correct answer.

$0E3 Because BASIC 2.0 doesn't handle positioning in relative files quite right, one must position the relative file pointer before AND AFTER a read or write to a relative file.

$0E4 OK, I admit it. I placed this answer and its discussion somewhere in my store of information, and it must have fallen behind the cabinet, because I cannot find it. I will post an answer to this as soon as I can find it, but the answers really must go out, as they have been held up long enough.

$0E5 The following sources can trigger an NMI interrupt:

1) The expansion port.
2) CIA #2.
3) The RESTORE key.

$0E6 The following sources can trigger an IRQ interrupt:

1) The VIC-II chip.
2) CIA #1.
3) The expansion port.

$0E7 The ROM is located from $C000 to $FFFF, yet the ROM code does not begin until $C100.

$0E8 VIA #2, located in memory from $1C00 to $1C0E.

$0E9 Bit 6.

$0EA Depending on the file, the following operations can be done on a locked file:

1) Rename will change file name, although not contents of file.
2) Random access can be used to alter file.
3) Formatting the disk will alter the file. (duh!)
4) Save-with-replace (@0:) will replace file and unlock it.
5) Opening file in append mode will allow it to be changed, and unlock it.
6) Opening a relative file and adding or changing a record will succeed and unlock file.

$0EB The file can be as large as a sequential file, since both are stored in the same way: 168656 bytes. However, since a program contains its load address as bytes 0 and 1, the largest program size is 168654 bytes.

$0EC Random access (or direct access) files are a misnomer. What you really doing is opening the disk for reading and writing. You need to open command to access a random file: (assume drive 8)

`open 15,8,15` and `open 1,8,4,"#1"` will open a random access file using buffer 1.

`open 1,8,4,"#"` will open a random access file using the first available buffer. Now, by using B-R, B-W, B-A or their replacements, you can write data to sectors on the disk. Note that Random access files are different from relative files.

$0ED A splat file. This is the correct term, believe it or not.

$0EE Since the 8050 has twice the on-board RAM (4kB), it has 16 buffers, but only 13 are available. (All CBM drives use one buffer for zero-page memory, one for stack memory, and one for temporary variables.)

$0EF The new first track is stored at location 26, and the new first sector is stored at location 27. These values are copied to their correct locations after the save is completed.

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ON THE HORIZON

COMMODORE AND COMPUTER INDUSTRY NEWS

IDT Pulls Plug on Genie Interactive

Just four days into the live beta of their new Genie Interactive service, IDT management suddenly took the service offline. The reason? An inside source at IDT indicated that management wasn't prepared to compete with recent price cuts announced by America OnLine (AOL) for its internet service, and was also concerned over competition from Microsoft Network (MSN). It appears that the decision is a final one, as employees of the Genie Interactive division have all been released or reassigned.

Genie Interactive was to be an incarnation of the Genie online service, superimposed on the internet. It offered advanced video and audio support that would have placed it at the leading edge of internet online services, while maintaining the unique friendly community structure that Genie has been famous for. No announcement has been made concerning whether the decision would have any effect on IDT's operation of the current Genie online service, whose Commodore Roundtable continues to be the main source of online support for Commodore users.

64'er Ceases Paper Publication

The German-based publication, 64'er, has published their last paper-based issue (the November 1996 issue was the last). 64'er was a Magna Media publication in the German language that targeted Commodore 8-bit users. While the publication will reportedly continue on disk, it appears that the disk is to be bundled with a Magna Media PC publication called PCGO.

In learning of this, we can't help but draw a direct comparison of this situation to that of Compute's Gazette when it made a similar move. We're sad to see this turn of events for the once extremely popular German publication, but there's no doubt that this is yet another example of how large publishers react to dropping subscription rates. Bundling the disk with a PC publication would, in our opinion, appear to number the days of 64'er in any form.

Certainly this comes as a bad blow to German users, who have always made up a large percentage of Commodore users worldwide.

SSI Redirects Efforts

Software Support International (800-356-1179), a long-time supplier in the Commodore community, recently began telling customers that they would discontinue Commodore and Amiga support at the end of 1996. Shortly thereafter, however, the company's message changed, saying that they would continue to sell items remaining in stock after that date, but would no longer advertise in the market, or attempt to procure new products. The company is apparently redirecting its efforts into the Intel PC side of its business.

SSI carries a vast number of Commodore products, and is presently the main source of entertainment and other software for the Commodore community. SSI is also the sole distributor for Maverick, a disk archiving and backup utility.

CMD to Provide Printer Setup Utility

More and more printer companies are moving away from providing DIP switches on their printers, replacing these with software setup programs that configure the printers electronically. But because the computer market has become more and more MS-DOS/Windows-concentric, these setup utilities are usually only supplied for that particular platform; in addition, the move in recent years away from providing technical programming information in user manuals has made it nearly impossible to configure modern printers on any other platform.

CMD, who is currently supplying printers from Panasonic into the Commodore market, has recently developed a Commodore program for the Panasonic KX-P1150 9-pin printer which mimics the MS-DOS utility supplied by the manufacturer. CMD will be bundle their utility with KX-P1150 printers purchased through them. CMD also plans to create additional programs for other printers which they sell if such utilities are required for changing the configuration of the printer.

COUGAR Address Change

The Commodore Users Group Ames Region has notified us of a change in their address. Please use this new address for all future correspondence.

COmmodore Users Group Ames Region (COUGAR)
128A General Services Bldg, ISU
Ames, IA 50011-4001

A Visit with Matt Desmond

Commodore World and CMD recently got a visit from Matthew Desmond, author of the popular shareware program Desterm. During his visit, Matt produced a copy of Desterm 3.00 beta, and proceeded to give the CMD/CW staffers on hand a guided tour of the program. While it would probably be unfair for us to release details of the program at this point, we can report

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that Matt has almost completely revamped the internals of the program, in an effort to wrench as much speed out of each individual routine. Matt also displayed the program's ability to work with RAMLink, to detect real-time clocks for setting the time, and also showed off the program's new ability to configure device definitions using CMD partition and path functions.

While some mention of a new beta test release was made, Matt was on his way overseas on a business trip, and mentioned that this wouldn't be possible until around the end of the year. We'll be sure to bring you more details of this as they become available.

QWKRR128 Version 5.0 Beta Release

Rod Gasson has recently announced the availability of a version 5.0 beta release of his QWKRR128 software. QWKRR128 is a C128 program used to read and reply to Fidonet mail packets. According to Rod, the beta will be available to all registered users of QWKRR128, and includes a number of enhancements and bug fixes, including:

- Supports full 255-byte character sets
- Reads messages of ANY length, including the ability to print, export, or small.dat them)
- Separate VIP & TWIT lists
- UUdecodes messages of any length as long as the UUencode is in a single message
- Decodes MIME (Base64) messages
- Added keyboard tables so it can be configured to 'international standards'
- Updated the 'auto-netmail' routines to include Internet Email as well as fido netmail
- Improved the address book so it will handle both the fidonet format addresses and email style addresses
- Added the ability to ATTACH files to a message or reply
- Improved the routines to detect a valid index file
- Added code so that you no longer have to quit QWKRR in order to read a different mail packet
- Improved the macros so that whole words can be used as a 'trigger', which can be used as a simple spell corrector to avoid common typing mistakes
- Added a 'scrap macro' that can be defined and used while in the editor itself, without the need to add it to your macro file
- Added code so that quote initials can be changed 'on the fly'
- Added time/date stamping to the zipped REP packets
- Improved access speed by about 3 times for RAMLink users
- Improved tagline handling to allow up to 10,000 taglines in one category
- Additional cosmetic changes and bug fixes.

The new beta version is available from the 221b Baker Street BBS in the US and GEOZ BBS in Australia, as well as from the following FTP sites:

ftp://ccnga.uwaterloo.ca/pub/cbm/INCOMING/telecomm/qwkrrv5b.lzh
ftp://hal9000.net.au/pub/cbm/qwkrr/qwkrrv5b.lzh

More complete information is available at:

http://www.hal9000.net.au/~moranec/qwkrr10.html

Centsible Software Closing

Centsible Software has recently announced that they will soon permanently shut down their operation. No details for the closure were provided. For further information, we suggest contacting the company directly.

Centsible Software
PO Box 930
St. Joseph, MI 49085
616-428-9096 (Orders and Information 12-6pm EST)
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Cents@sprynet.com (Internet Contact)
http://home.sprynet.com/sprynet/cents (WWW)

ERROR CORRECTION

The staff at CW would like to extend our sincerest apologies for incorrectly identifying Raymond Day as Max Cottrell in a picture presented on page 27 of Issue #15. Sorry, Ray!

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Just For Starters

by Jason Compton

IF YOU CAN'T BEAT 'EM, CHEAT!

I don't need to remind you how many great games there are on the Commodore computers. Whether you're a die-hard Commodore game enthusiast with shelves full of manuals, boxes, and disks, or an entertainment dabbler who prefers productivity or other forms of diversion on your machine, odds are that there's at least one game in your collection you wish wasn't quite so hard to play. It's not necessarily a failing of yours, some games are just particularly hard. In this installment of Just For Starters, I hope to set you on the path to making certain gaming problems easier on yourself, and give you the impulse to investigate new methods and applications of exploring games to their fullest potential. Some may view this as cheating, but don't worry, your Commodore doesn't have a very strict sense of fairness. It won't be offended.

Now that I've got you interested, I'll explain a bit more what I mean. While there are a number of ways you can alter a game to make it easier, we'll deal with certain classes of cheating-namely, "sprite-kill" cheats, good for action games where colliding with enemies would otherwise mean your demise, "find the hidden word" cheats, where you search a disk for the password or code word that an adventure game asks you for, "super-human statistics" cheats, in which adventure/role-playing characters can take on abilities far beyond their normal means, and "poke-value" cheats, allowing the change of a value or two of memory using the POKE command and to obtain special advantages.

Don't worry, this isn't an article for advanced programmers. I discovered all of these for myself and, after 11 years of Commodore computing, I'm at best a rank amateur at programming the machine. All that's required is a brave heart, certain utilities (some easy to obtain in the public domain or commercial markets, others more rare), and backups. It is *vitally* important that, to be on the safe side, you only attempt these methods with backups of your software. Some of the later cheats can damage disk data if not executed properly ruining your game.

SuperCartridge Shortcuts

The Commodore's line of third-party "fastloader" or "super" cartridges are excellent tools to facilitate the would-be rulebender. This is the only method, short of some considerable programming knowledge, you can make one of the neatest and easiest cheats work: the sprite-collision kill.

Here's the basic gist: In many action/arcade games, your character is a sprite: a special, easily animated graphic. Typically, your enemies are also sprites. Depending on the type of game it is, colliding with enemies (or certain types of scenery) could be fatal. The Commodore is set up to detect collisions between two sprites and between a sprite and background scenery. Cartridges such as the Action Replay and Final Cartridge will disable this detection, which allows you pass unharmed through wave after wave of adversaries. This can be a bit unrewarding since there may be no challenge left to the game, but if you're dying to see how the game ends, it can be a worthwhile endeavor.

Most cartridges also offer a machine-language monitor, which will come in handy for our later tricks. In addition, the FastLoad cartridge from Epyx, which is generally a limited cartridge, offers an excellent disk sector editor, which will also be quite handy. If you're not fortunate enough to already have a supercartridge, your only current recourse is the used market, the last supercartridges recently went out of production. Of special note is the Action Replay cartridge. If you're going to get hardcore about game exploration and cheating, this is the cartridge to have. It is the ideal cartridge for all of the sorts of cheats we discuss in this article.

The other advantage of supercartridges is the reset button. Being able to reset is a crucial element to "poke-value" cheats. Only the Action Replay allows you to poke in values while a game is running. When using a 64 (128's have their own reset button), you will need a reset button as found on the Final Cartridge III, Super Snapshot, or other cartridges, as well as certain printer interfaces, in order to make these work. (If you're feeling particularly dedicated to this concept, but cannot for the life of you find a decent cartridge for your 64, piecing together a reset switch for your C64 is relatively trivial.)

The Action Replay can actually generate cheats of its own. The method is very clever. While the game is running, you can enter the "freeze" mode of the cartridge telling it to keep track of a certain value (generally, the number of lives you have.) After you lose a life, you re-enter the freeze mode. With any luck, the cartridge will have identified the specific value in memory that represents your lives, and will set it to a nice comfortable value in the realm of 250.

For other cartridges, the process is a bit more difficult. Not all games can be cleanly restarted. For a master list of cheats, there's no better place to look than the World Wide Web. If you have

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access (it's a very good idea, as the Commodore community on-line can be very helpful and is a great source for information), look no further than http://www.jyu.fi/~np/c64cheats.html. There are cheat codes for hundreds of C64 games.

Poke-Cheats

This may all be overwhelming, so I'll cite an example from this online resource. Let's say you're playing BMX Kidz. To activate its cheat, you would first reset your computer to 64 BASIC mode, then enter the cheat poke code, which for BMX Kidz is POKE 9015,173. To restart the game, enter SYS 8148. You're done! Clearly, finding these methods can be a bit of work, but we're not asking you to do anything but type what's listed. If this resource is insufficient for your needs, however, it's time to get more down and dirty.

Down and Dirty: Memory Monitor Search and Modify

How would you like to be able to give your favorite adventuring party abilities and treasure beyond compare? It's often possible, if you have the patience. While I promised this article wouldn't require programming experience to fathom, how the 64 tends to store data like RPG character statistics is worth a quick explanation.

Each ability of a character, take Strength as an example, is assigned a value, often between 1 and 18, or 1 and 100. This value is typically stored as a single byte in a location in memory, along with the other attributes of that character, and the character's name. When you save a game, these pieces of information are saved, either to their own file or to a large aggregate file. Sometimes these values will appear in two sets, close in memory to each other. If a temporary game effect reduces or increases one, it can eventually be reset to its "permanent" value. This is much like having a backup and a master copy of a disk.

In a memory monitor, you can examine any byte of any file on a disk. Monitors are available commercially, and can be found on just about every supercartridge on record, as well as in many disk copying utilities. Any monitor worth its salt will let you examine memory as hexadecimal values, or values between 0 and 255 as represented in the hexadecimal number system. (Hexadecimal numbers are 0–9 and A–F: A representing "10" and F representing "15". A hexadecimal number of 0F means 15, a hexadecimal number of 10 means 16, and so on.) A full explanation of this system is beyond the scope of this article, but our example should make matters more clear. If this system is not immediately transparent to you, some individual experimentation may prove helpful. In addition, just about any programming tutorial, including those in Commodore World, will explain the system to you.

Once you're comfortable with this concept, you're ready to begin. An excellent example for our purposes are the SSI series of adventure games, including the Dungeons and Dragons and Buck Rogers sagas. Each character is saved as an easily accessible file. To get to work, load in the character with your favorite monitor. (The SSI files will start with an inverted character: no problem, just type the letter while holding down CTRL.) The monitor will tell you the start and end addresses (locations of memory) that the file occupies. These are vital pieces of information, be sure to make a note of them. If you want to give a character advanced statistics, all you need to do is search for the values.

In the SSI games, each character has 6 major attributes which can be set at a value up to 18 within the game. To take their abilities further, just look through the short file for the sequence of 6 numbers you set from within the game. If your character had the numbers 12, 14, 15, 16, 11, and 13, you'd look for the sequence "0C 0E 0F 10 0B 0D". Exceptional monitors offer a "hunt" command that will actually locate this sequence for you. If not, you have to locate it on your own. Feel free to change these... perhaps we'll change them all to 24? In hexadecimal, 24 is 18, so change that sequence from above to read "18 18 18 18 18 18". But wait! Remember that second sequence I alluded to earlier? Sure enough, you'll find a second sequence of "0C 0E 0F 10 0B 0D", change the second sequence to "18"s as well.

Now you've got a hero ready to take on the world. Save the character using your monitor's save command and supply it with the same start and end addresses you had when you loaded it. As with anything, you may want to keep a backup of this file, so rename the original file to something else and give the new, modified character the old name. The worst thing that could happen is that your modifications will feed the game some bogus data and crash the computer. If this happens, just go back to the drawing board with the backup character and give it another try.

Users of the Action Replay have the special advantage of being able to hunt and modify these values while in freeze mode, without exiting the game. If this all seems overwhelming, don't worry. It's a skill that takes a little work to develop, but it requires absolutely no programming knowledge, only a basic understanding of hexadecimal and how to use a monitor.

Down and Dirty: Sector Editing

Sometimes, as good of an adventure game player as you might be, you simply cannot find the clue you're looking for. Be it a password or code word or a document telling you that you need to be in a certain place to find out the identity of the murderer, you're absolutely stumped as to what it might be. A floppy disk sector editor can open your eyes to the answer.

A sector editor allows you to look at the raw data on each sector of your floppy disk. Each floppy is divided into 35 tracks, or rings; each track is subsequently divided into a number of sectors which varies slightly depending on how close to the center of the disk it is. Instead of simply loading up a program and RUNning it, a sector editor allows you to look deeper. More times than not, you'll find gibberish. However, if you're determined to find a password, perseverance is the key.

I offer my real-life experience, which led me to master this process. The game which put Interplay on the map as an independent software publisher was Neuromancer. It's a 4-disk epic futuristic sci-fi adventure. It's also fairly difficult. You, the hero, must access a number of high-tech BBS systems, for which you need link codes and passwords. Sometimes these are hard to come by, and often encrypted in the game, requiring you to find skill in cryptography within the game. There is a way around all of that, however. By starting on Track 1 of the disk and working your way slowly outward, you quickly discover a motherlode of link codes and passwords: all of the valid ones in the game, I might add. Who knows what else you'll discover while searching in there?

Sector editors can be found from a number of public domain sources. As mentioned earlier, there is also an excellent and easy-to-use sector editor in the FastLoad cartridge. The disk-backup software Renegade/Maverick for the 64 boasts one, and the Cannon 128 backup program has a sector editor with a special feature: the ability to search a disk for a certain string. For our example here, that knowledge would be invaluable—search for one known link code, and you'll soon find them all.

Cheater's Retreat

There are, of course, other ways to make games do your bidding than what we've described here. As you explore the seeds I've planted here, you may find totally different approaches to getting past a certain door or solving a certain puzzle, and I'd be happy to hear about it if you have Email access. I can be reached at: jcompton@xnet.com. Until next time, I hope this article has helped you see gaming in a whole new, and enjoyable, light.

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Graphic Interpretation

by Paul Sullivan

GEOWRITE DONE RIGHT PART II

Don't be fooled by the seeming limitations of your 9 pin printer. Though slow, with the right software behind it, the output can be amazing. In the first part of "GeoWrite Done Right!" we looked at some tips and tools for greater ease and enjoyment of geoWrite usage. In this edition of geoSphere, we will look at some fonts, desk accessories, and programs to add flair to your printouts.

Imperfect print...

The limitations inherent within geoWrite are frustrating, to say the least. The smooth fonts on your screen print with jagged edges, and the many font styles your printer may carry can't be used with the printing function. So what is a person to do? Granted, for the nine-pin and twenty-four-pin printer owner, there are many "doublestrike" printer drivers that can at least make the print bolder. But as a result, the fonts' rough edges become even more obvious... and besides, doublestrike drivers usually don't help with the NLQ function.

I have traveled this road, and let me assure you, some fabulous printer boosters exist that will have you grinning ear to ear. I would like to begin with Bill Prendergast's 1K creation, the LaserMatrix 2.0 printer driver, dated 9/24/89. It is installed just like any other printer driver—select it as the device (printer) driver. Once you finish with your document, simply

start the print function in "high" mode. The printout on standard GEOS fonts such as Dwinelle or Roma will be smoother and bolder because Lasermatrix is a high density, interpolating 8-bit driver. Quite simply, it will interpolate, or change, geoWrite's output to a higher resolution where additional pixels are inserted to greatly improve the printed result. There is a price to pay for greater resolution, longer time between line passes. The computer is basically "stopping and thinking" for a couple of seconds on each line before printing it. However, I think, you will find the added quality is well worth the extra time spent waiting.

Out of style(s)?

Yes, yes, those WYSIWYG fonts do look nicer under LaserMatrix, but I'll bet your next complaint (as was mine) is the inability of geoWrite to utilize your printer's font styles. It is nice, after all, to underscore an italic touch, and be bold with it. The Commodore font is geoWrite's key to accessing the NLQ fonts resident in your printer. To get printing in style, let me introduce you to Terry Van Camp's "Text Print 1.0" which is a 5K desk accessory (dated 1/20/89). Specifically designed for NLQ printouts in geoWrite 2.0 and 2.1, this masterpiece supports bold, underline, italic, superscript, and subscript-serving many useful purposes for the geoWrite user. College papers print fast and neat. And now, book titles can be italicized or underlined with superscript reference numbers. And for your resume cover letters, go to town in style! Boldface looks great on your employment history.

On to PERFECTion PRINT (LQ that is!)

Perfect Print LQ for GEOS is indeed the ultimate for output boosting, and if you have a nine or twenty-four pin printer and have given up hope for excellent quality, hold fast! Since 1991 I have owned a nine-pin Star NX-1000C Rainbow printer. Upon purchasing this masterminded package for an almost insignificant fee ($34.95 for the Main system with seven LQ fonts rather

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than $350 for an Inkjet). I have rescinded all intentions of upgrading my printer in the near future. I have produced some amazing artwork and professional quality resumes that have stunned some IBM-toting colleagues of mine.

The contents of the package include HQ (high quality) fonts and drivers for improved output on geoPaint and geoPublish in addition to the LQ (letter quality) system for geoWrite. The LQ Print system operates independently from any GEOS printer drivers, going beyond the interpolation method of the HQ drivers and LaserMatrix which may distort fonts. The LQ Print system utilizes high resolution LQ fonts to achieve optimum printer quality. The difference is quite apparent when LaserMatrix and LQ outputs are compared side by side.

So... you came, you saw, you bought. Perfect Print LQ includes a very detailed and user-friendly manual with every possible point and pixel covered for geoBeginner and geoGuru alike. I would like to add some helpful suggestions. First and foremost, know what your needs are and arrange accordingly. Will you be using Perfect Print every time you use GEOS? Then remember the RUB procedure—Read the manual, Understand the material, Backup the program. The RUB safety measure insures that you will get the most out of the program with minimal chances of costly setbacks.

The frequent LQ user will definitely want to make additional work disks, possibly one for the HQ system and one for the LQ system. I have a series of disks in my library I call "dumpdisks." With my 1750 RAM unit configured as a 1571 and "qwikStash" on each disk, upon booting the qwikData auto-exec list dumps (batch file copies) geoWrite, deskTop, the LQ system and fonts to the RAMdisk. Perfect Print LQ can then go to work at lightning speed.

Do you have any favorite fonts that you would like to see used by the LQ system as an LQ font? Using the font utilities, the font or fonts of your choice can be marked as LQ fonts, and are made acceptable to the Print System thereby. Though it may take time, you can even create your own font from scratch (a font editor is included with Perfect Print) and make it LQ. Finally, in the words of the Perfect Print owner's manual, page 28, "...the most important function in the print menu, and the very heart of the GEOS LQ Print System, is the regulating of the resolution (or print density) with X and Y." X ranges from 1 to 9, representing the horizontal print density, and Y, from 1 to 3, the vertical. X:9 and Y:3 is the highest resolution. As with Lasermatrix, the price to pay for great quality is time, although well worth it. The default resolution, you will notice, is X:8 and Y:3. I strongly recommend, for almost flawless resolution with a bit more speed, that X be put to 9 and Y be set to 2. The print will appear bolder and wider than 8/3 because the horizontal resolution is maximized.

Perfect Print LQ and the other tools we looked at can be an asset to anyone's GEOS library. If you don't yet have them, I urge you to get them—I promise you won't regret it! Until next issue, happy computing!

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SUPER CPU

By Gaelyne R. Gasson

CMD'S NEW TIME MACHINE

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When Commodore World asked if I would write about CMD's new SuperCPU from the point of view of an average Commodore user, it was quite an honor. It's an interesting challenge, as I'm not average, and I doubt anyone reading this article is either. We each have our own reasons and methods of using our C64's. What tipped the scales in my favor is that I'm not a programmer. Sure, we all know there's no such thing as an average programmer either.

I'm still struggling with the concept of what an "average C64 user" is. There are game players, spreadsheet users, writers, telecomms people (including BBS operators), and those who use the 64 to balance their checkbook and write an occasional letter. What I've tried to do is use the SuperCPU in as many different ways as possible, so I could share my experiences (good and otherwise).

What is it?

The SuperCPU 64 is a 20MHz (MegaHertz) accelerator for the Commodore 64 that speeds its operation up to 20 times it's original speed of 1MHz. Undoubtedly you've heard about fast-load cartridges which accelerate the speed at which programs load from disk. The SuperCPU isn't a fast-load cartridge. It speeds up the computer itself, not the disk drives; affecting things like how responsive the keys are to your touch and how fast the machine operates. For instance, if you use a program that sorts a long list of addresses alphabetically, the list will be sorted 20 times faster with the SuperCPU.

First Impressions

My SuperCPU 64 arrived on a really busy day, which actually worked to my benefit, though I didn't realize it at the time. Although disappointed I couldn't tear into the box right away, my initial thoughts were that I really didn't need to have something else to fiddle with right then. Maybe CMD read my mind because the SuperCPU has been the easiest new computer peripheral I've ever added to my system. This was almost disappointing in a way... I thrive on throwing myself into new toys for my computer, immersing myself, and learning to use them. The only thing to learn about the SuperCPU is what each of its three switches are for (that took all of about three seconds, as each are well labeled). It doesn't get much easier than that!

Appearance

It's hard to describe the SuperCPU as a cartridge because I tend to think of a cartridge as something small, light and plastic. The CPU isn't heavy, but seems very solidly built. Its beige metal case is about four inches high, six and a half inches long, and about 2 inches wide when plugged into the computer. It has an extension that slides into the cartridge port, allowing the SuperCPU to nestle against the computer. The backside of the CPU includes a pass-through port so you can add other cartridges to your system. The top of the CPU sports the familiar CMD and SuperCPU accelerator logos in beige on a black-matte finish. The top has three sturdy toggle switches, a red light, and a reset button. Lightly tapping the reset button gives the equivalent to hitting the "RESTORE" key, holding it down for half a second resets the computer.

The first toggle switch is used to turn the entire device on or off. When it's off, it's as if the SuperCPU isn't attached to the computer. Since I have a C128, when I turn on the computer with the switch off, the computer boots in 128 mode, but when the switch is on, it boots in 64 mode with the SuperCPU enabled.

The middle toggle switch is to turn the built-in JiffyDOS on and off. I've rarely used this, due to lack of necessity. Unlike CMD's RAMLink, it is designed for those of us with JiffyDOS'ed computers. You no longer need to worry whether it's on or off when installing and using the accelerator.

What is JiffyDOS? That's almost another article in itself. It serves a dual purpose. It's an enhancement for your computer making it easier to use and taking a lot of the drudgery of typing long commands out. Instead of typing:

```
load "filename",8 <return>
```

(then, waiting for the program to load before I can type:)

```
run <return>
```

I can press the F1 key to list the disk directory, stop the listing where my program is, move the cursor up so it's on the same line as the file, then press the up-arrow key and hit return. (It's easier to do than to write about). This maneuver loads and runs the program, all in one step. JiffyDOS also lets you read text files from the directory listing and a host of other basic niceties that make computing easier. The SuperCPU includes a JiffyDOS manual, and the SuperCPU manual which includes a few helpful JiffyDOS hints and tips.

JiffyDOS is a disk drive speed enhancement, but to benefit, your disk drives must have JiffyDOS ROM chips. All of CMD's disk drives include this, and they sell ROM's for almost every make of Commodore and third party disk drive in existence.

The inclusion of JiffyDOS sets the SuperCPU apart from other accelerators. The Schnedler 4MHz accelerator could be purchased with a version that supports JiffyDOS, but other accelerators require the user to disable JiffyDOS, accessing the disk at stock speeds. Disk drive speed has always been one of the key bottlenecks of Commodore computing in general, and particularly noticeable with accelerators. When the computer is consistently run at a higher pace, you really notice when the disk drives are accessed at the slower 1MHz speed. The accelerator only speeds up the computer and NOT disk drives, as it must drop to the lowest speed (1MHz) during disk access. JiffyDOS helps to speed up disk access considerably (up to 1500%, according to the SuperCPU manual).

Enough about JiffyDOS, let's get back to describing the switches on the SuperCPU. The third (and last) switch is labeled SPEED, and can be toggled for either "Turbo" or "Normal." When the computer is in Turbo mode (screaming along at 20MHz), the red light is on. When the computer is in it's standard 1MHz mode, the light is off. During disk drive access, the light blinks as the computer switches between Turbo and Normal mode.

Plug n' Play

I have a RAMLink, and had wondered what adding the accelerator would do to my current desk arrangement, and where the CPU should be plugged in. This didn't turn out to be a problem afterall. The SuperCPU plugs into the computer's cartridge port, and the RAMLink plugs into the pass-through port of the CPU. As a precaution, I backed up the files in my RAMLink, and turned off my computer and disk drives. I left the power and battery cables to my RAMLink attached, and very carefully removed it from the cartridge port moving it just enough so I could fit the CPU between it and the computer. I plugged the SuperCPU in, then added the RAMLink to the system and powered up.

When the computer is first turned on, it has a black background, and the SuperCPU Accelerator logo is displayed in a large white graphic on the screen. Under this, a gray rocket sporting a blue CMD logo glides from the left side of the screen to the right, trailing a multi-colored stream. Sure, it's a cheap effect, but it's immediately obvious that you're no longer using an ordinary Commodore 64. The initial screen quickly disappears and the familiar blue C64 screen comes up, but with different text.

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It reads:

```
SUPERCPU DOS 1.32©1996 CMD
C-64 BASIC V2 38911 BASIC BYTES FREE
```

The RAMLink had survived the change with its memory intact. I used the JiffyDOS command to list the disk directory (the F1 Key) for my RAMLink, and if I had blinked, I would have missed the directory scrolling. I've had to learn a few new tricks to view selective disk directories if I'm looking for a specific file. The RAMLink is the only "disk drive" that can be accessed at 20MHz. The CMD HD hard drive is is only accessed at 1MHz, but because it uses a parallel cable attached to the RAMLink, it can sometimes be too fast when listing disk directories. The 1541, 1571, 1581 and FD drives seem to have faster displays overall, but this isn't due to a speed increase of the drive, but to the computers' ability to put the text on the screen faster.

Typing

The keyboard is very responsive, without being overly sensitive. I tried touch-typing the alphabet and had no problem with double characters or other signs the keyboard would be a concern.

Giving it a Go...

The SuperCPU came with a utilities disk for GEOS that included in an Installation program. The program patches the boot disk (or CMD device partitions where GEOS is booted from), and can optionally add new mouse drivers to the system. Once GEOS could be used in Turbo mode, I enjoyed using it far more than I ever had in the past. The difference is remarkable. I wrote an article using geoWrite, and found I no longer type too fast for the computer. The screen scrolled smoothly from one side of the page to the next without annoying hesitation. I couldn't wait to see the results in geoPublish. I grabbed some old articles, converted them to geoWrite format, and started geoPublish. Within a few minutes, I had a fully laid out newsletter.

GeoPublish has always had a problem with constant disk access when zoomed in and scrolling around the page in Graphics mode. As I used a file on the RAMLink, I never noticed if it accessed the drive or not.

My test for geoPaint was more involved. In times of boredom, I play with the fill feature of paint programs just to see what kind of designs I can make if I mix up backgrounds and fill one type of pattern over another. In the past, I've slowed the computer down to a crawl simply by clicking in a place with just the right kind of background and color, causing a search for areas to fill in. Now, there is not even a noticeable pause.

Another difference in geoPaint was the ability to scroll around in clip-art files without pauses for disk access (similar to geoPublish's zoom mode). Some of the increased speed was due to the file being on the RAMLink, but I had these results with the file on other disk drives as well.

The new mouse drivers for GEOS reconfigure one of the mouse buttons so that it will switch the SuperCPU to 1MHz mode when that button is held down. This is useful for drawing detailed art work and for those times when the mouse just seems to be too quick. It took some time to get used to the concept, and to be honest, I'm not sure if I have the technique mastered yet.

...if I had blinked, I would have missed the directory scrolling... perhaps CMD should have called it a Time Machine instead of an accelerator.

When I use Gateway as my desktop, the screens seem to display too fast (primarily because I'm used to scrolling the disk directory with the mouse). Before I know it I can go from the top to the bottom of the directory, and when I'm looking for something in the middle, it is frustrating. The cursor keys seem to operate in 1MHz mode, so using the up/down cursor keys to move to a file can be tedious when using the mouse is too fast. The Turbo/Normal switch on the SuperCPU solves this problem by allowing me to switch to normal speed temporarily, find the file, and then switch back to Turbo mode.

One last GEOS change many JiffyDOS users will appreciate is that the routine GEOS uses to return to BASIC mode is also patched when the boot disk is updated. When you exit GEOS to BASIC, it now resets with the computer in JiffyDOS mode.

Productivity

I turned my attention next to productivity programs and utilities. The first utility I checked isn't a program, but rather a feature of JiffyDOS I use to read text files. With JiffyDOS, you can list the directory and cursor to a file you want to read, enter @T, then press RETURN to read the file. I've trained myself to immediately press and hold the CONTROL key (pausing the screen as long as it's held down), because the screen scrolls continuously once started. During my first test of the SuperCPU, I wanted to see how long it took to display all of a text file to screen, so I didn't bother with the CONTROL key. It was mind boggling to see so many characters on the screen so fast. How fast? Using a PETASCII sequential file of 1981 blocks, it was displayed to screen in 2 minutes, 8 seconds. It took over 13 minutes in normal 1Mhz mode to see the same amount of material. I tried reading the same file using Craig Bruce's ACE operating system and the "more" command. A file is displayed on the screen and requires the user to press the spacebar down to access the next screen. In order to test it's speed compared with the JiffyDOS @t command, I held down the spacebar so it would display in a non-stop fashion until it reached the end of the file. Even with the program checking to see if the spacebar was held down, it beat the JiffyDOS @t command, displaying the 1981 block file in 35 seconds. In normal mode it took in 3 minutes, 5 seconds to accomplish the same.

The problem with this test is it demonstrates speed, but isn't very practical. Ideally you should have a speed allowing a comfortable reading pace for the text file. ACE is best in this circumstance, as it pauses when the screen is full and waits for the user to press the spacebar before continuing. The pace is customized to the user. I've found since I got the SuperCPU, I've become more accustomed to the speed and can now better manage use of the CONTROL key to pause while reading a file or listing disk directories with JiffyDOS.

I occasionally need to translate files from PETASCII to ASCII format, so I thought I'd try using ACE to translate a 1981 block ASCII sequential file to PETASCII. With the CPU in Turbo mode, it finished in 44 seconds; in normal mode the process took over 6 minutes.

Word Processing

I installed TWS64 on my RAMLink, and though I've always thought this word processor is very efficient, when it loads instantly, it almost seems like a "pop-up" utility.

Sorting text is is very dependent on the computer for processing. With the added computer speed I expected to see a marked difference in the amount of time it took to sort a large amount of text. I gave it a 21 block file full of single-line taglines to sort. In normal mode the result was pretty good at 34 seconds, but sorting the same text file (after reloading it) took a mere 3 seconds in Turbo mode.

I had similar results when sorting an address book database. I first sorted the data on the address field to assure it would jumble the other

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data, then did a timed sort of the name field. A 148-record data base sorted in under a second.

Telecommunications, Archives and Mail Reading

Naturally, I checked out C64 terminal programs to call BBS's, online services and my Internet account. I use a SwiftLink cartridge and have a 28.8K modem, so I've been accustomed to having fast connections and nice downloads, but the SuperCPU improved this as well. I was disappointed that I couldn't take advantage of Novaterm 9.6's ability to use the C128 80-column screen, but CMD tells me the 128 version of the SuperCPU will allow this when in C64 mode.

As for downloads, I wasn't disappointed at all. Using Zmodem and downloading to a RAMdisk buffer, I'd consistently achieved speeds of around 990cps (characters per second), and slightly better when using other protocols prior to using the SuperCPU. With the CPU in Turbo mode, the results are now consistently around 2773cps.

Archived Files

Some Commodore users will probably never need to create or dissolve archived files, but it's something that took up a fair portion of my computing time... until the SuperCPU arrived. Twice a day, I download a mail packet to read offline, and the packet must be dissolved before I can read it. If it's a really large file the process can take several minutes. I also download and test new programs, and these must often be dissolved too. My husband recently released a test version of his QWKRR128 program, archived in LZH format. He'd made the suggestion to others that it could be dissolved in C64 mode using a utility called lhx64. I gave it a try, and the 221 block file was dissolved in 28 seconds. When I used CS-DOS in C128 mode to dissolve it, CS-DOS reported the elapsed time as 2 minutes, 36 seconds. Dissolving ARC and SFX files gave me equally impressive results. A 169 block SFX file normally takes just over 3 minutes to dissolve, but with the SuperCPU, the job was finished in 22 seconds.

With a faster CPU and my enjoyment of reading BBS mail offline, I had to give QWKie (a 64 offline QWK mail reader) a try. It works with the SuperCPU and is indeed quicker. I was able to speed read my way through a 303 block mail packet in no time at all. However, I found I had to be careful when pressing the return key to page through messages, as it was more sensitive to the keyboard than other programs I've used.

Graphic Programs

I tried out The Fun Graphics Machine and Doodle!, and in both cases found the added speed to be a help rather than a hindrance. Doodle! has a setting to adjust the speed of the cursor when drawing, and I was really pleased to see that this option worked with the SuperCPU. I enjoyed watching several demos for FGM and realized I had to adjust the speed of the demos. Even if a demo was saved set for a reasonable pace, it was too fast with the accelerator.

Sounds

I normally compute with the sound off unless I'm listening to SID files. Sounds might be affected by the 20MHz speed of the CPU, so I turned up the volume. For most general programs there might be a change in the tones that sound, but it wasn't a dramatic change. Mark Dickenson's Sidplayer and Digiplayer operated 20 times faster, but the SID files played fine (the band was a bit on the wild side, though).

Digitized RAW files had to have their speed adjusted to play correctly, but many of these need similar adjustments when played at normal speeds as well. All the "self-playing" digitized files had to be played in normal mode, but they could be loaded in Turbo mode. Some demos and games were affected by the CPU speed, but others were fine. I didn't realize until I flipped the Turbo switch that the sound actually had been affected on some of the demos I played, as they still sounded pretty decent at a faster speed.

Playing Games

It was a rough job playing games to test the SuperCPU, but it had to be done... naturally I tackled the job with gusto. I really enjoyed myself, and found that even though some of the games were unplayable, they were worth loading just to see the results when they ran faster. Some games were fun to watch as a demo in Turbo mode, but turned out to be unplayable at 20MHz. A few programs (especially games) are sensitive to having the Turbo switch toggled while within the program. With some, you can switch between Normal and Turbo modes at will and have no other effect than to speed up the action (this proved to be a very interesting way to "cheat" with some games). Other programs, however, would crash if you tried this. The point at which the speed is switched may also make a difference.

Other games would load with JiffyDOS, but wouldn't load with Turbo mode on. Unfortunately, several of these also accessed the disk during play, which meant if you tried to play in Turbo mode, as soon as it tried to access the disk the program would grind to a halt.

Each game had its own unique reaction to Turbo mode. If I were really into playing games I'd probably add sticky notes to the disk sleeves with comments about what mode the game operates best in, and whether it's sensitive to being loaded wi th computer in Turbo mode.

Dealing with BASIC Programs

There are times when we need to make a minor change to a program, or find one in a magazine to type in. The Fractals programs in David Pankhurst's BASIC Instincts column in Commodore World Issue #15 intrigued me. I also knew the programs would highlight the difference between normal and Turbo mode.

The biggest change I noted was how fast a program listing can cruise by. I'd made a few typos and needed to view each line to compare with the magazine listing until I found my error(s). It was nearly impossible to do as I couldn't hit the CONTROL key fast enough to be able to see the first several lines of the program. I found the best option for me was to list the program in segments, such as from line 10–100, then from 100–200, until I had worked my way through the entire program.

The fractals proved to be excellent examples of the difference in speed between 1MHz and 20MHz modes—it was great not having to wait several minutes to see the effects David wrote about, but to see the results in seconds and further results after a few minutes.

I Want More For My C64

So is the new SuperCPU a keeper? I think it is. In terms of productivity, it's excellent. I'm sure my enjoyment has a lot to do with the fact I use it with a RAMLink. The combination of these two provide better results than many other computer platforms I've tried.

The speed has spoiled me, though. I now have a list about a mile long of new programs I want to try that would take advantage of the speed. Using the SuperCPU made me feel the C64 is capable of so much more than it has ever been before, and I hope programmers who use it will write new or updated programs that take full advantage of the device.

While I really enjoy using the SuperCPU 64, I'm looking forward to trying out C128 version. By the time it comes out I should be fully adjusted to life in the fastlane and will be ready to have the speed *and* 80 columns. Meanwhile, I'll keep shaving minutes off my day and enjoy the extra time the 64 SuperCPU has given me. Hmm... perhaps CMD should have called it a Time Machine instead of an accelerator.

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ALL ABOUT SuperGEOS

The Diary of a Programmer with a Purpose

By Maurice Randall

It was an ordinary workday, early in May of '96. I was at my auto repair shop when suddenly the UPS truck pulled up. In his arms was a package from Creative Micro Designs. I signed for the package and proceeded to check out the contents. It was a prototype unit of the new SuperCPU for the c64 sent to me with the hope I could make GEOS work with the SuperCPU. GEOS would run at 20MHz, and never be the same again.

OVERCOMING OBSTACLES

Working with the folks at CMD, I came up with several ideas I thought should be incorporated into the SuperCPU hardware as well as the GEOS software to make their combined use as simple as possible. The most daunting task for the user(usually) is determining the first steps to take when installing any new hardware or software. We therefore wanted to make that part to be as simple as possible. The idea developed into the GEOS application—which is supplied with the SuperCPU—called 'SuperInstall'. By simply booting up GEOS as you normally would, and then running SuperInstall, all the modifications to your boot disk necessary to use GEOS at 20MHz are made. The program takes care of the all the dirty work for you.

WHAT TAKES PLACE

There were two main problems with GEOS caused by the speed of the SuperCPU. GEOS does not use the standard Commodore serial bus routines that are built into the computer (they correctly time the data transfer between the computer and the disk drives).If it did, then the modified routines that are now in the SuperCPU would be used. Since GEOS has it's own routines for communicating with the disk drives, those routines would try to send and receive data faster than the disk drives could handle. The point at which disk drive communication takes place needed to be slowed to the original 1MHz. There is an AUTO-EXEC file that SuperInstall creates and places on your boot disk that will run during the bootup process. The file is called SUPERGEOS. This program patches the GEOS kernal routines to make sure that GEOS is slowed down to 1MHz during disk access and then speeded back up to 20MHz when finished.

The other main problem involved the mouse (a joystick works fine). The mouse driver receives information from the SID chip in order to determine the direction the mouse is travelling, how far, and how fast it is moving. In order to read this function of the SID chip, there is a certain amount of time that must pass after switching to this function before a valid reading

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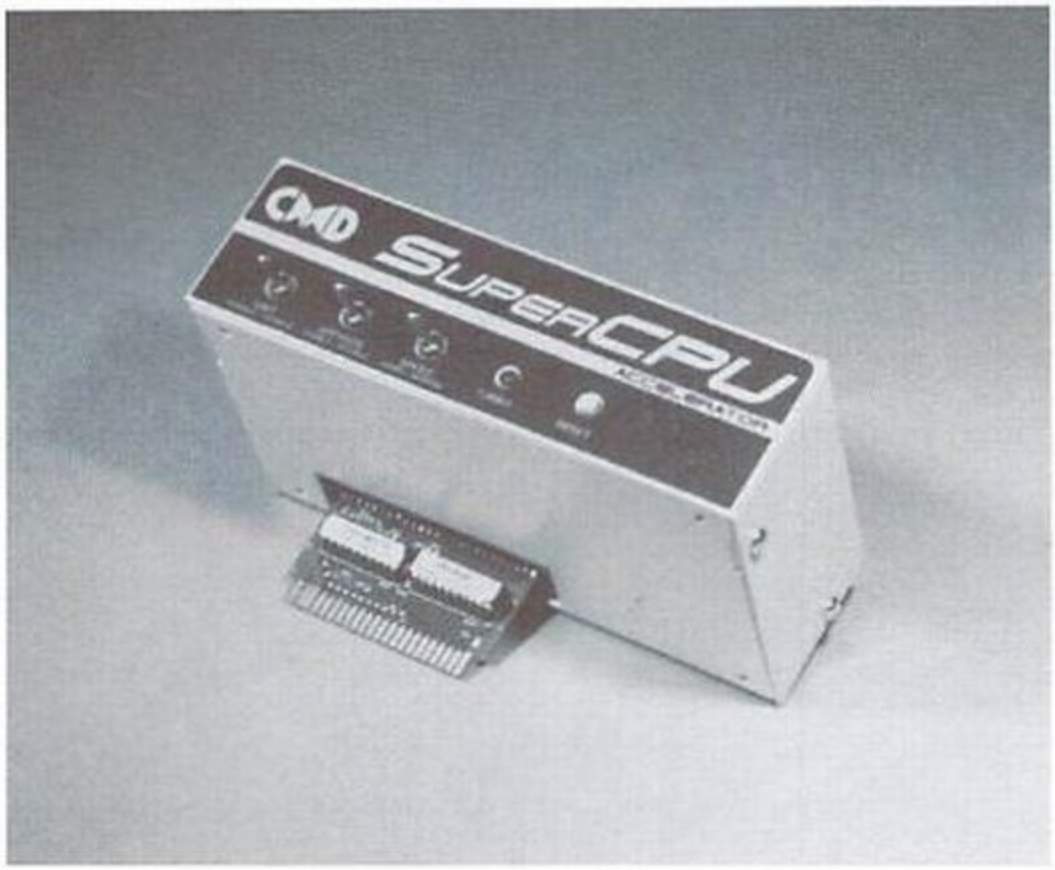
can take place. The mouse driver merely performs a wait loop, and then reads the chip. At 20MHz, the wait loop is negligible. A valid reading rarely occurs and the mouse pointer bounces around violently. To remedy this problem, new mouse drivers were created.

NOW, I CAN BOOT GEOS

Initially, I wrote a patch program and created a slightly modified mouse driver so I could get GEOS up and running. I sent these files off to CMD so they could boot up GEOS and work on some of the other problems, and decide if they required modifications to the actual hardware or the built–in software in the SuperCPU operating system.

I was able to take the prototype unit to our local user group meeting and show it off. The members witnessed the first public showing of this new speed marvel. GEOS was impressive, but work still needed to be done. Over the next few months, CMD improved the hardware and I improved the software. The resulting product is very easy to use, and works nicely with GEOS. In fact, it works so well, that you almost forget it is even there. The software running during bootup goes unnoticed and the mouse driver performs flawlessly. GEOS runs so fast, problems have come up that were never before encountered.



BLESSED WITH SPEED

Before many people started buying 1750 RAM expanders and began using RAM Disks, GEOS got a bad rap. It was slow and the constant disk access was painful and turned some people off to using GEOS. GeoWrite uses the disk drives extensively. Each page is stored seperately on disk in it's own record within the document file. Document changes took time, especially when no page breaks were used. The RAM Disk fixed this problem. GEOS was no longer slow due to it's file access, but rather to the speed at which the computer was running. When you are typing into the middle of a geoWrite document, the program stays ahead of you. GeoWrite is always operating in insert mode, so as you type into the middle of a sentence, the data appearing after the cursor moves along with each keystroke.

GeoWrite is not a simple program. It does a great deal of processing. GeoPublish is worse. These programs are working with a virtual bitmap that is an 8 x 10 printed image. These are not text images either—they are graphic images. The images are pictures appearing to contain text. Each character is composed of little dots. GeoWrite and geoPublish, in conjunction with several built–in GEOS routines, have to calculate where each of these dots will go.

NO MORE WAITING

When an editing change is made on the screen, some of the data must be moved around. At 1MHz, there was a lot of waiting involved. Not any more. I used to spend time pondering the changes I would make to our club's newsletter (I'm the editor) as I was waiting for the screen to reconfigure. Now I don't wait. I click on a tool or move my fingers to the keyboard and start working. The screen is redrawn almost before I am ready to start typing.

SPEED CAN BE A PROBLEM

Faster processing has many rewards, but it can also create a few headaches. Fortunately, the times when GEOS is a pain to use at 20MHz are rare. Since June, I've been able to produce our club's newsletter using the SuperCPU and geoPublish. I knock at least two hours off the time I would normally spend putting the newsletter together.

While working on the newsletter, I noticed some problems the speed created. When scrolling through font point size selections and selecting from various patterns, the scrolling was too fast! I had a hard time changing from a 10 point size to a 12 point size. I would click on the arrow to change the point size and would end up somewhere around 18 or so. It required a very brief and abrupt tap on the mouse button. Selecting patterns was just as difficult. It was nearly impossible to go from solid black to the next pattern which was a 50 percent grayscale, an adjustment was definitely needed.

"You almost forget that the SuperCPU is even in use except that everything is so much faster than before."
–MR

SLOW IT DOWN

Maybe if the creators of geoPublish had known the SuperCPU was coming, they would have allowed for increased speed . They would most likely have either switched the SuperCPU to 1MHz or used some custom timing routines with the 64's built–in clock chips to insure that each selection of point sizes or patterns came within a certain prescribed amount of time. Unfortunately, they had no idea we would be flying through those selections some day.

I couldn't see letting CMD release the SuperCPU without some sort of solution to this problem. That's where the mouse comes in again. I added a new function to the right button on the 1351 driver and the center button on the SmartMouse. This function would produce the same click as if you pressed the left button, but while doing so, the SuperCPU would be slowed down to 1MHz.

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As long as the 1MHz button is used to click on the scrolling functions in GeoPublish (or any other application with a similar function), things will happen just as the original programmer intended. If you use a joystick, I am sorry to say that you are out of luck. You will have to resort to using a quick click on the fire button. The natural solution would be to purchase a new SmartMouse from CMD, and of course, CMD would prefer that also.

SAFE MOUSE AREAS

I encountered another problem while using geoPublish. While in ZOOM mode, and using the mouse to scroll around the page, the page redraws itself after scrolling to the desired position, allowing the page to scroll about much faster. At 20MHz, all you do is move the mouse to any edge of the screen and the scrolling begins. Pull the mouse away from the edge, and the scrolling ceases and the screen is redrawn. Many times you scroll farther than you intend. There are two solutions. One is to use the position indicator at the top of the screen and just move the little box around within the little page, or while using the mouse at the edge of the screen, press the 1MHz button. This works well as long as you don't press the button while aiming at an object that can be selected. A little finesse may be required in this situation.

In addition, you can just reach for the SuperCPU, and manually switch the unit to 1MHz. Scroll the screen to the desired location, and then switch it back. The beauty is you can move the switch any time you want. While the screen is slowly being redrawn at 1MHz, flip the switch and it will finish at 20MHz. You won't damage anything by doing this. You can even flip the switch while disk access is taking place. The software and hardware are both designed to handle this type of abuse.

I use geoSHELL almost exclusively in place of the Desktop. While viewing a directory, the filenames scroll by too fast now. Of course, I can hold the CONTROL key to pause the scrolling, but I discovered another neat trick. While holding the CONTROL key to pause the listing, I can press the 1MHz button to override the CONTROL key and the listing will begin scrolling again, but at the slower 1MHz speed. This is pretty handy when looking for a file. The method also works with any other function in geoSHELL requiring the CONTROL key to pause the listing. The type command displaying text files also suffers from scrolling too fast. The 1MHz button pressed at the same time as the CONTROL key works in this case as well.

A SLOW 128

A few years ago, when I started using GEOS on my 128, I very rarely went back to GEOS on the 64. It wasn't so much the fact that I could see more data on the width of the screen, but rather the fact that the computer was running twice as fast. After all, geoPaint in 40 column mode is still preferred over 80 column mode for some operations. And geoPublish can only run in 40 column mode anyway. 40 column mode always runs at 1MHz. But the true 80 column applications like geoWrite would run faster since they operated at 2MHz. The Desktop and geoSHELL also work faster in 80 column mode. Now, I have a SuperCPU to use with GEOS 64. I still use my 128, and it is still my main system, but it seems so slow now. I am much more productive with the 64 running at 20MHz.

As I said, I can save at least 2 hours each month while working on our club's newsletter, but my main use is programming. While working on the new version of geoFAX, it takes me about 8 minutes to use geoLinker to link all the individual *.rel files together to create the actual application. So, if I spend 10 minutes or so typing in a change to the source code and then relink the files to test the change, I can use up a good half-hour through the whole process before I am ready to either fix the change or move to another portion of the program. With the SuperCPU, my geoFAX files link together in about 50 seconds. I save about 7 minutes each time I test a change to the program.

BACK TO THE BEGINNING

Occasionally, you may find a need to use the installer program again, as with changing your mouse. Let's say you currently have a 1351 mouse and later purchase a SmartMouse. You can still use the 1351 mouse driver that SuperInstall created for you, however, there is an advantage to switching over to the SmartMouse driver. In addition to the 1MHz button, the right button will become a 20MHz double-click button for double-clicking on certain icons and other objects. When it comes time to switch to a different mouse driver, you simply run SuperInstall and turn off all functions except the one that creates the desired mouse driver. The program will create the new driver for you and will also rearrange the position of the drivers so that the new one is now the first mouse driver on the disk so that the Desktop will load it into the system for you during bootup.

All of the patches and new files that are used with the SuperCPU are specially designed so you can still use the same boot disk whether you have a SuperCPU connected or not. This prevents the need for two separate boot disks which could lead to much confusion and other problems. You almost forget that the SuperCPU is even in use except that everything is so much faster than before. Simplicity is always best.

An effort was made to ensure that GEOS would work just as well with the SuperCPU as without. Every aspect was considered. You can still exit to BASIC and hit the RESTORE key to pop back into GEOS. When exiting to BASIC, a patch was applied to GEOS to insure the unit was running at 20MHz upon exit. The function that allows the return to GEOS also makes sure that the correct speeds of 1MHz and 20MHz are running at

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the appropriate times. Those that like using R BOOT may still do so, you are covered also. The same version of R BOOT that you've been using will still work with the SuperCPU.

GETTING OUT OF TROUBLE

Very rarely should you have any problems using the SuperCPU with GEOS. It has been made fully compatible. Chances are, if you have trouble, it will be because a program is corrupted in some way and would fail whether you had a SuperCPU or not. If at any time you find that the SuperCPU gets locked into 1MHz mode and stays there while using GEOS, something is wrong. Some GEOS kernal calls were made by a program you use that were performed out of order. This is simply bad programming and will likely show up while using the SuperCPU. The solution is to either reboot the system or load up SUPERGEOS and check the settings it provides. If the turbo mode shows 1MHz, just click on the simulated switch to switch it back to 20MHz. If the problem occurs again, try to remember what you did to create the problem. It is most likely the same program that will give you trouble each time.

A PROGRAMMER'S POINT OF VIEW

For the most part, programming work won't have to change. If you write a program for GEOS, and you follow all the guidelines, your program should work with the SuperCPU. There are some things you can do to make GEOS with a SuperCPU work even faster than it already does. A considerable improvement in speed can be achieved. I am using these ideas in the new release of geoFAX and they will likely be covered in the upcoming programmer's reference guide for the SuperCPU. In the meantime, just follow the rules like you would anyway and your software will function just fine.

ORIGINAL BOOT DISKS

For those of you that buy the SuperCPU, also buy geoMakeBoot from CMD. Remember, SuperInstall makes changes to your boot disk. Even though you can do this to your original boot disk, it would not be a good idea. The extra money spent on geoMakeBoot is peanuts compared to the risk involved if something should happen to your original boot disk. Plan on only installing the SuperCPU to a disk that you have created with geoMakeBoot. Then, don't use geoMakeBoot while the SuperCPU is running or the patches applied for the SuperCPU will be embedded within the new boot disk and it will only work if the SuperCPU is present. The correct order for making your boot disks:

1. Boot up with original boot disk.
2. Make new boot disk with geoMakeBoot.
3. Modify new boot disk using SuperInstall.

The resulting boot disk will work with or without a SuperCPU. Follow a few simple rules and have fun using the SuperCPU with GEOS.

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DEMOS Part III

By Sherry Freedline

When asked if I'd like to write this column, I was a little concerned that I'd have problems finding topics to write about within the NTSC demo scene. However, due to the activity of the past few months, the "sceners" have made this an easy task. In fact, there has been so much activity that in this issue I am going to have to depart from my initial format of reviewing two classic demos and two new demos so I can provide you with all the latest demo news of the past few months.

The conclusion of the first ever 4k NTSC Compo headlines the news of recent events in the Commodore NTSC Scene. July 1st, 1996 was an important date for demo artisans and enthusiasts alike. It was the deadline for the 4k NTSC Compo entries sponsored by Driven Magazine. A total of seventeen entries were submitted. It seemed as if years passed by while the evaluators reviewed and rated the entries. In actuality, it was only ten days. On July 11th, the entries were released as a group to the anxiously awaiting crowd on-hand at the weekly Thursday night NTSC Demo Conference. The results of the competition were announced the following day (see sidebar for results).

It doesn't matter to me which demo is number one or number seventeen. I am simply pleased to see that seventeen individuals are still enthusiastic enough about their Commodore 64's to spend their time producing top notch entries for the competition. This may sound a tad tacky, but I consider all the entries winners. I'd like to extend a big thank you to each of the participants along with Coolhand of Driven, and the evaluators (Demonger, Diskmaster, Monty Python, Mr. X, and Coolhand) for such a fun and exciting competition. Unfortunately, space doesn't permit me the ability to review each of the entries. Driven, however, recently released a special edition of their disk magazine devoted entirely to the 4k entries. This issue contains reviews of each entry and comments from the evaluators regarding their experiences while rating each of the entries. Driven also held a special poll allowing the public to vote for their favorite entries. The results, informally called the "People's Choice Awards", were released concurrently with the special edition of Driven. The files may be obtained from the official Driven site on the World Wide Web (http://soho.ios.com/~coolhnd) or from my very own web site (http://www.lm. com/~qt).

Once the excitement from the 4k entries release subsided, it didn't take long for things to heat up again. August was indeed an "Indian Summer" for heating up the scene. The long awaited Electron demo was released on August 15th along with "The Eve of the Millennium", a debut demo from an all new demo group—Millenium. Both demos are masterpieces in their own rite as you will see for yourself after reading their respective reviews below. Each demo can also be easily downloaded from my web site. So, what are you waiting for? Turn on that disk drive and "leech" those files!

Another newsworthy event took place the weekend of August 17th, with the Assembly '96 Party. Assembly Parties are an annual event in which multi-platform graphics, music, and demo creations compete for prizes. It's great to see the Commodore categories are still included in the Party. The Party's Commodore graphic and music entries were recently released to the Commodore Public on August 22nd and can also be downloaded from my web site (Please keep in mind the graphic files are of an adult nature).

As you can clearly see, it's been quite an interesting summer for the Commodore Demo scene. I hope the winter months will bring us even more fun and excitement. Now, on to the reviews of the two recent NTSC releases... enjoy!

Eternal/Electron (Dokken)

A month later, while still reeling from the release of the seventeen 4k entries, Electron released Eternal. Eternal is a fitting name as it will eternally be one of my favorite demos of all time. As I write this column, it's been out for nearly one week

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and I've viewed it in its entirety at least five times since its debut.

If you've been involved in the demo scene at all, you already know that Electron demos are to die for! Electron left the scene a few years ago and returns to the Commodore arena with the release of Eternal. Electron consists of two members: Dokken and The Gambler. Eternal, however, is a one–man show created entirely by Dokken (Bob Stoner).

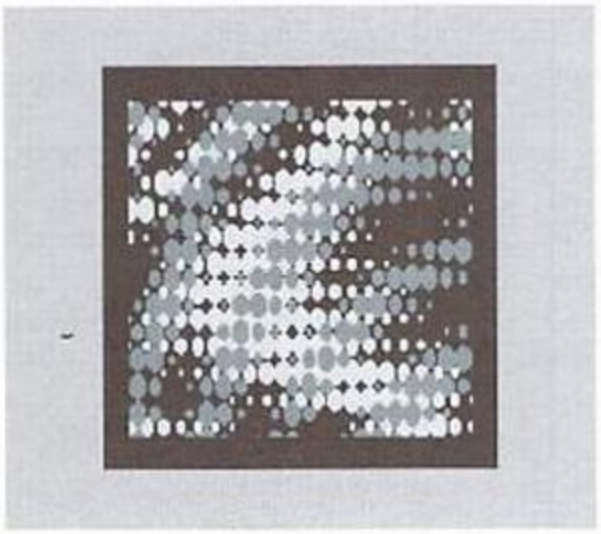
I'll never forget my first reaction to Eternal. I was awed, amazed, mesmerized, and even a bit hypnotized. I knew Eternal would be an excellent demo (after all, it does sport the Electron logo), but I never, ever dreamed I would enjoy it so much!

Now I've reached the point in my article where you probably expect me to describe Eternal in great detail. Well, let me tell you, it's very tempting to keep the contents a mystery. It's almost as if I'm giving you a gift and telling you what's inside before you even open it. But, hey, I guess it's part of my job. And, although it goes against my better judgment, here's the scoop...

Eternal opens to the sound of triumphantly tolling bells as the large letters of TRON unroll on the screen, one by one. The bells remind me of wedding bells announcing a new husband and wife. In Eternal I like to think the bells celebrate the return of Electron to the Commodore Demo Scene. This indeed is something to celebrate! I, for one, am grateful they've returned because they are one of my all time favorite demo groups. Welcome back, Electron!

Next, the TRON letters swing to the left where you'll realize they are merely a part of ELECTRON 1996. At the top and bottom of the screen you are treated to some Dokken prose (uniquely displayed with a cool routine). You'll want keep your eyes open for some letter morphing tricks! The demo continues with "Random Thoughts from Dokken" discussing The Blues Brothers and Superman. I admit I didn't get it, but perhaps you will.

Eternal's third screen displays some fun with scrolls. First an Electron logo appears on the screen along with greets and yet more prose from Dokken. Then, at the bottom of the screen, you'll see ten vertically dancing scrolls. All ten scrolls contain the same text as the scroll located at the top of the screen which is a good thing, because you couldn't read them if you wanted to. It's a unique scroll where the letters scroll upwards from the bottom of the screen, then split in half and sway their way upwards.



Plotters appear to be a favorite among demo authors. Dokken displays his version on Eternal's fourth page. Dokken's plotter is interactive, giving you the fun of playing with "bobs"(the dots comprising the plotter,), colors, coordinates and more. "Bobs" come in various shapes and colors as supplied by the author. They are part of the first time fun of a demo. However, upon successive viewings it'll be old stuff and you'll more than likely pass it by for more exciting screens.

The real magic of Eternal begins with Flashing to the Beat 2 on page 5. This page is the reason why I come back to Eternal again and again. The fun begins with a colorful blue display of large round "bobs" accompanied by a very impressive musical composition bearing a likeness to the music of "Arkanoid". The "bobs" flash and sway to the beat of the music. As the tune progresses, the "bobs" change in color and appearance, and you'll even see a few smiley faces in there! It's a pretty tough task to give this routine a worthy description. The best I can really say is that it's totally astounding and that you just have to see it for yourself. I've always been a huge fan of these "screen saver" type displays. They completely relax me and always remind me of the joys of the gift of sight. I'd love to see this routine expanded to contain even more "bobs" and a never ending musical accompaniment.

Eternal continues on from here with a raster display, ending credits, and even a cute "after the end" page. The "after the end" page, contains yet another eye-dazzling color routine, but this time without the so-called "bobs". This display features more of a "plasma" style routine. You'll surely get a chuckle out of the humorous banter between Kevin and Bob. Additionally, you'll be treated to a surprise cameo appearance which I refuse to give away, but, if you've been a long time fan of Electron, I'm sure you'll be able to figure out the guest appearance contained on this page.

The Commodore Community still possesses a number of rarely talented individuals. Dokken is a truly gifted Commodore Coder. I'm glad he's decided to return to the Commodore Scene and I hope this time he stays for a very long time. Thanks for the gift, Dokken and welcome home!

The Eve of the Millennium/Millenium

The Eve of the Millennium is the debut demo of a brand new demo group, now known to all as Millenium. Millenium consists of three very talented individuals: Roy Batty, Waveform (formerly of Omni), and Fungus. All three members are proficient machine language coders. However, as you will soon see, Roy Batty is, or will soon be, well-known for his amazing musical compositions. With that said, let me introduce you to The Eve of the Millenium—a mega-demo debut!

The 4k NTSC Compo Results

#	Entry
1.	4GASM by Elwix/Style
2.	Dim4 by Stephen Judd
3.	4k Party by T.M.R/Cosine
4.	Endless Trip by Zed Yago/K2
5.	Eye Candy by Roy Batty/Millenium
6.	4k Compo - Crossbow/Crest
7.	The Phantom/FOE
8.	Julia Set Morpher by dW/Style

Driven Chart 9608

Endless Trip; Zed Yago/K2
4gasm; Elwix/Style
4k Party; T.M.R/Cosine
4dim: Stephen Judd
Eye Candy; Roy Batty/Millenium
4k Comp; Crossbow/Crest
Stick Boy; The Wiz/Style
Juliamorph; DW/Style
Foe K: Wrong Way/FOE
(unnamed); The Phantom/FOE
Worst 4k Ever; Dokken/Electron
4k Part; Hobbit/Venom
XwaveX; Waveform/Millenium
Bumpmapper; Highlander/Fairlight
4k Demo; Bonestripper/Omni

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This monster debut consists of six demo pages plus an introductory screen and a noter file. The introduction, created by Roy Batty, features a Millenium logo, two cube sprites, a scroller introducing the group, and "Snowflute", an original musical score by Roy Batty. The text within the scroller introduces the group. Roy Batty states the reason for choosing "Millenium" as their group name is they believe "...the Commodore Cult will prosper into the second millennium and beyond!" As the scroll continues, you can't help but get a positive feeling regarding the goals of the group. Roy goes on to announce that Millenium is willing to share their ideas and algorithms to anyone

interested and invites us to use his musical compositions in our own demo creations. The only price is the mention of his name. The combination of the positive messages in the scroll, the sun rising on the new Millenium in their logo, and the cool tune wafting from the page encouraged me to move along to the next page to further explore the talents of this new group.

The first real demo page, entitled "Lineflex", is also by Roy Batty. Lineflex treats it's viewers to more great music, this time "Tubebells Revisited", another cool logo, some words to ponder, and an interactive display in the center of the screen containing an eight-line sinus wave. The waves can be changed with the use of a joystick in port 2. I always appreciate the creators adding something interactive to their pages. It allows the viewer to do something more than sit, stare, and listen to the demo. A logo of the word "Millenium" created of flashing colors uniquely swings from side to side behind the initials MLM to create a three dimensional effect. Another graphic exists at the bottom of the page making a rather profound statement along with more scrolling text for your reading pleasure, both of which I'll leave for you to explore on your own.

Next up is VectorWave, treating the Commodore Scene to some unique code from Waveform and more wonderful music from Roy (the tune is "Hellrider"). As this demo progresses, you'll really begin to develop an appreciation of Roy's musical talents not to mention the ability to adjust your volume up and up and up further. The VectorWave page is divided into three sections. The top portion contains the scroll of greets and enthusiasm from Waveform and beneath that are dancing multi-colored star-shaped sprites. The best part of the whole page is what lies below on the bottom two-thirds of the screen: a display of "two-dimensional shapes that constantly rotate, shrink and expand". Be sure to allow yourself some time to thoroughly enjoy this page.

The five different presentations of the vectors take some time to sit through, but, it's time well spent. Use caution, because I've heard that Wave Pages have been known to hypnotize! Just remember to blink every now and then and you should be okay.

Finally, after enjoying the previous pages, you'll meet up with the third member of the group, Fungus. (I'd love to know the story behind his handle!) Fungus introduces us to his talents with a page he calls "Big Scroller". And, like all the previous pages, it includes an original tune from Roy called "Stylerock". Big Scroller is exactly that, a page filled with 25 lines of text. Fortunately, the text within each line is all the same, saving you from the dilemma of trying to read each individual line. The lines change colors and scroll across your screen in a "wavy" format. It's a small, but colorful page.

The fifth page of the demo, "ShadyWavey", is one of the best pages I've seen produced by Waveform to date. ShadyWavey contains no scroller or logo, but it does contain a unique display of vectors in an even more mesmerizing

display than before! The vector display is presented in the middle of the screen, and bordered on the top and bottom by a dazzling color routine. The music used for this page is "Sunset Trail," by Pegasus. If you haven't heard this tune yet, you are really missing out on a treat. I've listened to it about a dozen times and have yet to tire of it. It's upbeat, catchy, and truly spectacular. Pegasus is a youngster within the Commodore Scene and his work is unbelievable. I'm sure we'll hear a lot more from and of him in the future.

Back to the vector display. If you somehow managed to escape VectorWave un-hypnotized, there'll be no escaping the combination of the music, colors, and vectors of ShadyWavey. Waveform's color routine is what is known as a "color wash", which oscillates outward from the center in time to a sinus loop. The vectors used are "shaded line vectors" which give the viewer the impression they are seeing tracers or afterimages of the vector rotation. Simply put, it's a relaxing, enjoyable, Commodore masterpiece you simply have to add to your collection.

Roy Batty's Netflex follows with yet another original tune, "Puckerup". Netflex is another unique graphical display of sines. This time around, the sines develop from a net. It almost looks as if the net "morphs" into the waves of a sine. The sines appear to bend along to the beat of the music. The page also contains more logos and more scrolling text from Roy Batty.

The last page of the demo is by Fungus. It's known as the "Tri-Logo Swing". Three logos bearing the names of each of the group's members appear on the screen. Each logo is different and swings from side to side independently from the other logos. The patterns used to create the logos are unique and interesting. The music of the page is "Syncosmic" (again, by Roy Batty). The bottom of the page contains yet another scroller used to close the demo.

With this last page we come to the end of the debut of Millenium. The underlying message resulting from the demo is: the Commodore Scene is here, and it's alive, and it's going to stay around for a long, long time. Millenium also conveys the importance of sharing their knowledge with novices just venturing into the scene. With all these positive goals and messages, and such a fantastic first production, Millenium has been warmly welcomed and accepted into the Commodore Demo Scene. Personally, I can't wait to see more from them. Remember, "The Eve of the Millenium" is only the beginning—they'll only get better from here!

Special thank you's go out to Waveform, Dokken, Dr. Ray, and Moloch for all their help preparing this article!

- Sherry

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HARDWARE IN REVIEW

Morse Coach

G&G Electronics, 8524 Dakota Dr., Gaithersburg, MD 26877, 301-258-7373

Are you a HAM? No, I am not implying that you are a bit sizable in the girth area, or that you can really brighten up a party. I am inquiring if you are an amateur radio enthusiast. I am, and have been for about a year and a half, as KB8WYW. I am merely a Technician class license holder at present, but I am working on my General Class license. My major stumbling block is the same as most others'... the code. For those who don't know, Amateur Radio licenses above the Technician level require the holder to pass a Morse Code proficiency exam. To achieve Novice or Technician class, you must be able to copy Morse Code at 5 words per minute (WPM). To become a General, the number goes to 13 WPM, and Extra Class license holders must be able to copy 20 WPM. Believe me, copying Morse Code at 20 WPM is no easy task.

G & G Electronics have a way to help get you (and me) up to speed (pun intended) on Morse Code. They sell a cartridge called Morse Coach which teaches Morse Code and tests your proficiency in copying it. Using the Commodore 64/128 as a computerized "code practice oscillator", it transforms letters and words into series of short tones (dits: .) and long tones (dahs:–). The user hears the letters just as if they were being transmitted from a person using Morse Code.

The cartridge contains three sub-programs to aid the learning of Morse Code. The first, called "Alphabet", asks you to choose a sending speed in words per minute (WPM), and how many characters to initially choose from when picking letters to sound out. Then, the program will sound out a letter in Morse Code, and wait for the user to type the corresponding letter on the keyboard. The program keeps statistics, including the time it takes for the user to recognize the letter sounded. If the user types the wrong letter, the program shows the letter on the screen and repeats its Morse Code equivalent. At any time, statistics on how many times a letter was successfully "copied" is available via the F1 key. This sub-program is used to learn the Morse alphabet. After each run of the program, check the stats and note the farthest right letter in the graph that has been successfully copied at least once. Count off its position from the left of the graph. The next time the program is run, enter that number when asked how many characters to choose from. Regular practice will enable mastery of Morse Code.

The other two sub-programs are functionally identical. The only difference is in scoring. These two programs, called "Practice" and "Speed Test" send groups of 5 characters to the C64/128 speaker as Morse Code. The user types or copies the code groups into the computer. Note that these code groups are not necessarily words, just sequences of characters. Copying code groups is harder than copying straight text, as the user cannot guess missing letters in words and infer certain words from context of other words. Thus, if you can master code groups, you can master text copying. Both programs ask the speed at which to send the letters, and how many groups to send. The practice program completes the sending of code groups and then displays the characters typed by the user. The "Speed Test" program, on the other hand, scores the session. If the user's copying ability falls below 85%, the program fails the user. To avoid feelings of inadequacy, don't try the Speed Test program until you are confident using the Practice program.

As I used the cartridge, I noticed it doesn't allow you to select speeds less than 10 WPM. While some may find this annoying, I think it is a plus. Many amateurs get stuck at 7–8 WPM. They visualize the dits and dahs of each letter, which works fine up to 8 WPM, but the letters come too fast at higher speeds. I also liked the cartridge because of its simple design. It allows you to change text and background colors, and run the 3 sub-programs. The program is text based, so if copious amounts of color and hires graphics are what you like, you'll surely be disappointed. Most hams prefer function above beauty, and I think others wanting to learn Morse Code will like the simple aspects of the cartridge as well.

Morse Coach has but a few faults, and only one is worrisome. The user input routine accepts only two digit numbers. If you want to enter 9 in the program, you must type in "09." A slight annoyance, but hopefully users will move above 9 into the double digits anyway. People tend to pick up 20WPM code easier if they learn each letter at 20WPM. If a user wants to learn 5 WPM code, it is best to send him the letters at 20WPM, and space the letters apart at the 5 WPM rate. That way, when he or she wants to move up to 13 or 20 WPM, only the spacing between each letter is changed. This is called the "Farnsworth Method," and it is quite effective. Using this method forces people to skip visualizing the dits and dahs and concentrate on the collective "sound" of the letter. If the code is learned in this way, moving to a higher copy speed does not require relearning the sound of each letter. Unfortunately, listening to the cartridge at lower speeds leads me to believe that both the code and the spacing are at the same speed. To overcome this limitation, try to copy code above 14 WPM. That way, you can at least pass the General code test. The difference in sounds between 15 and 20 WPM isn't that great, however, some folks have more sensitive ears than others.

If you are preparing to become an amateur radio operator, I encourage you to learn the code and enjoy the added privileges of the advanced license classes. If you are having trouble learning the code and don't mind learning without the "Farnsworth Method", check out the Morse Coach.

–Jim Brain

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Cleaning Out THE GEOS CLOSET

By Gaelyne R. Gasson

I recently had a discussion with someone who assumed I didn't use GEOS very often, and didn't like it. I do use GEOS, but I've never been "crazy" about it. Perhaps it's my ambiguity that spurred me to create my own GEOS environment, allowing me to get the most out of GEOS with the least amount of effort.

An Evolutionary Process

You might say that my GEOS environment has grown with me as I've added new hardware to my computer and acquired new GEOSsoftware. I've learned a few lessons along the way. I started with a Commodore 64, a single 1541 disk drive, and the GEOS v1.5 accompanying my C64. I didn't have much use for GEOS v1.5 because I had only 1 disk drive and lacked computer savvy. I hadn't yet learned the importance of setting up both work and utility disks. About six months later, I picked up a second disk drive and it was easier the next time I tried working with GEOS. I had a few ideas for projects which worked out so well, I still use the text and paintfiles.

I'd heard that GEOS v2.0 was a vast improvement over the version which came with my C64. When the opportunity arose, I picked it up along with geoPublish, GEOS Power Pak and GEOS Power Pak II. It took me some time to adjust to the changes in the new version, and to sort through the other disks to discover programs and utilities I could make use of.

I don't know what first possessed me to organize my GEOS disks, but it's something I've never regretted doing. I suppose it was the old adage "out of chaos comes order." Prior to rearranging my disks, I had spent precious time searching through disks looking for applications that I needed and files I knew I had saved but couldn't find. "There has got to be a better way!" I mumbled. And finally, I found it.

Cleaning the Closet

Like a mother sorting through a 6 year old's closet, I made piles (only my GEOS piles were certainly neater and smelled better). I started with "Applications and Utilities". Any program I had that was meant to do something useful (besides entertain me), was copied to disks labeled as Applications and Utilities. Later, I further sorted the Applications so any intended for geoWrite files or for geoPaint were on separate disks. The rest of the utilities mainly fit a "miscellaneous" category and were labeled accordingly. I then made sure I had all of my own creations on disks labeled as data disks, and also divided by type (geoWrite/geoPublish or geoPaint). I specified in the Info Box of the data file geoWrite and geoPublish files needing specific fonts. When I use the file I can be sure I have the correct fonts on the disk before I begin.

I only needed one input driver and one printer driver, which were already on my boot disk, so I didn't bother sorting these. I left them on the original disks from whence they came (and suffered for it later!). When I bought a mouse, I had to search through several disks for the mouse drivers I had acquired. It wasn't as simple as finding the original GEOS disks and grabbing the mouse driver, because I'd started using a modem, and had downloaded GEOS files from Q-Link (may it rest in peace). So, I had other disks to dig through in search of the perfect mouse-driver. I suffered the same hunt for the right file when I bought a new printer, and to keep this from happening again, I added a new category, "drivers", to my organized GEOS files.

Still Evolving...

Finally, I had every possible GEOS file organized on different LABELED 5.25 inch disks. I could find everything I needed quickly and without hassle. Naturally, the next step in my GEOS evolution was to throw a monkey wrench into the

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works and change things. I bought a 1581 disk drive, and with it, came the ability to have more files on a disk (up to the GEOS limit of 144 files). I could have faster access to a larger number of GEOS files if I spent the time to copy them onto 3.5 inch disks. Because my original disks were already sorted by category, this was a much faster, much easier process.

With the increased speed of the1581 disk drive, came the desire to boot GEOS from it. Since CMD hadn't yet come out with geoMakeBoot, I had to learn to use Maverick (a NON-GEOS utility program) to create a 1581 boot disk. I have a penchant for making things efficient, and tried over and over to put my most used application files onto my 1581 boot disk, only to discover with standard GEOS it isn't that simple. It's best to have a boot disk, and then change to a work disk.

The evolution continued when I bought my Commodore 128 and GEOS 128 v2.0, and again, with each new GEOS software addition I made. Things changed more dramatically with RAMLink and the purchase of gateWay (a replacement for the DeskTop in GEOS). GateWay uses the same input and printer drivers as standard GEOS does, but it also uses disk "drivers" so you can make use of the unique abilities that RAMLink, HD hard drives and FD drives offer. The other big difference with gateWay is the ability to create boot disks for each drive type. Several times in the gateWay manual it is mentioned that when your system changes (ie, you add a new disk drive or RAM expansion, or even a new input driver), you will need to create a new boot disk. I thought this would create the need for a half a dozen or more boot disks. I wasn't far from wrong. I'd long since sold my mouse, and had been using a joystick, so when my new trackball arrived, I found myself keeping copies of boot disks labeled "trackball input driver" with the disk drive configuration it was made with listed on the label. I've learned the time spent in creating (and LABELING) boot disks is well spent if it later saves me time and frustration. I have more disk drives than I can use with GEOS, and have found that creating boot disks of different disk drive configurations for each input driver (trackball and joystick) means I can quickly boot from any of the drives on my system if needed. It also means I don't have to have my 1571 drive available for GEOS all the time, but can use it immediately if I receive new GEOS software on 5.25 inch disks and need to move it to my 3.5 inch disks (this only took me a year or so to figure out!).

Just because you don't have a device, doesn't mean you will never have it. You never know when the "perfect" deal will come along, or if by some stroke of luck, you'll have a different disk drive type to use. I found myself, just this week, rummaging for my original gateWay disk to copy the HD drivers to my boot disks.

I used a utility to make organizing my GEOS collection easy. DIRMASTER by Kent Smotherman is a great tool for sorting GEOS and even non-GEOS style disks. It allows sorting of files on disk (CMD devices too) Alphabetically (backwards or forwards), by Date, or by File Type. Using the program makes it easy to first group types of files together and then alphabetize just the single group. It was also especially helpful for organizing my personal data disks by date of creation. The following is a list of Categories I used to organize my GEOS disks.

Applications/Utilities

Files on these disks include geoWrite, geoPaint, as well as the larger add-on applications such as geoPublish, geoFile, geoCalc, and geoChart. Supporting files (not including fonts) should be kept on the same disk with the application.

Write Specific

These include all the files needed for writing tasks, such as geoWrite, Text Grabber, WrongIsWrite, geoSpell, geoDictionary, geoPublish, and Toolkit.

Paint Specific

This disk includes both geoPaint and geoCanvas, as well as other utilities for graphics manipulation such as Photo Manager, SCRAPGRAB, and MacAttack II+.

Fonts

I set aside a disk specifically for Font utilities such as Jim Collette's Font Editor and a couple of Fontviewers/printers. I probably have more GEOS fonts than I will ever use, and the fonts which I tend to use most often are on a separate disk from the rest. I used Font Editor to create 3 or 4 separate Font files which have all of my most used fonts incorporated within them. I wrote on a 3x5 index card which font each point size is, and keep it with the disk, saving time when creating newsletters and other documents.

Paint and Clip Art

Used for geoPaint data files. Since using Photo Albums is easier within geoPublish or geoWrite, I keep these on separate disks. They are organized by type, such as clip art originally from Print Shop graphics, or from The Newsroom.

Text

Data files for geowrite and geoPublish. These are "storage" disks with my text files once I've finished with them.

DeskTop Accessories (DA's)

DeskTop Accessories are stored on separate disks, although I do keep a few that I use often on my work disks. I use the Text and Photo Managers most, along with ConvertDA.

Auto Execs

To be of use, most Auto Exec files have to be on your boot disk, however, some do run from GEOS as applications. I must be a pack rat, as I have a disk of these, too. My boot disk includes an Auto Exec called "DBGETFile1.1 by Jean F. Major which allows me to have access to more than the standard number of GEOS files whenever listing files in Applications. There are later versions of DBGETFILE, but v1.1 works fine in 128 mode and with gateWay.

Drivers

Includes all printer drivers, input drivers, and disk drivers for both GEOS and gateWay use.

Games

Some GEOS games are Desk Accessories while others are Applications. But, since the purpose of games isn't productivity orientated, I didn't bother adding these to the DA or Applications disks. I decided to keep them on a separate disk by themselves.

Wrap Up

Organizing all of these files won't do much good if they are all on separate disks. My 1581 work disk includes the geoWrite files mentioned above, the fonts I use, and a few other utilities. And of course, my two favorite games are also included on the work disk. Once booting GEOS, I can quickly import a text file I've written using another word processor, change the fonts and print, without breaking a sweat. Granted it took time to organize these disks, but it was well worth the time I now save when I have a project to complete. And that's how I "Get the Most" from GEOS.

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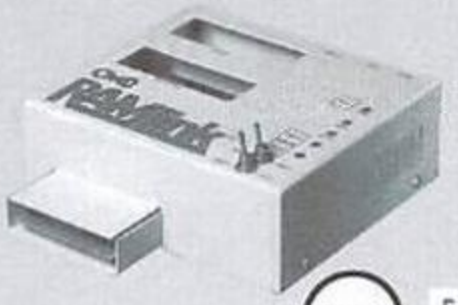

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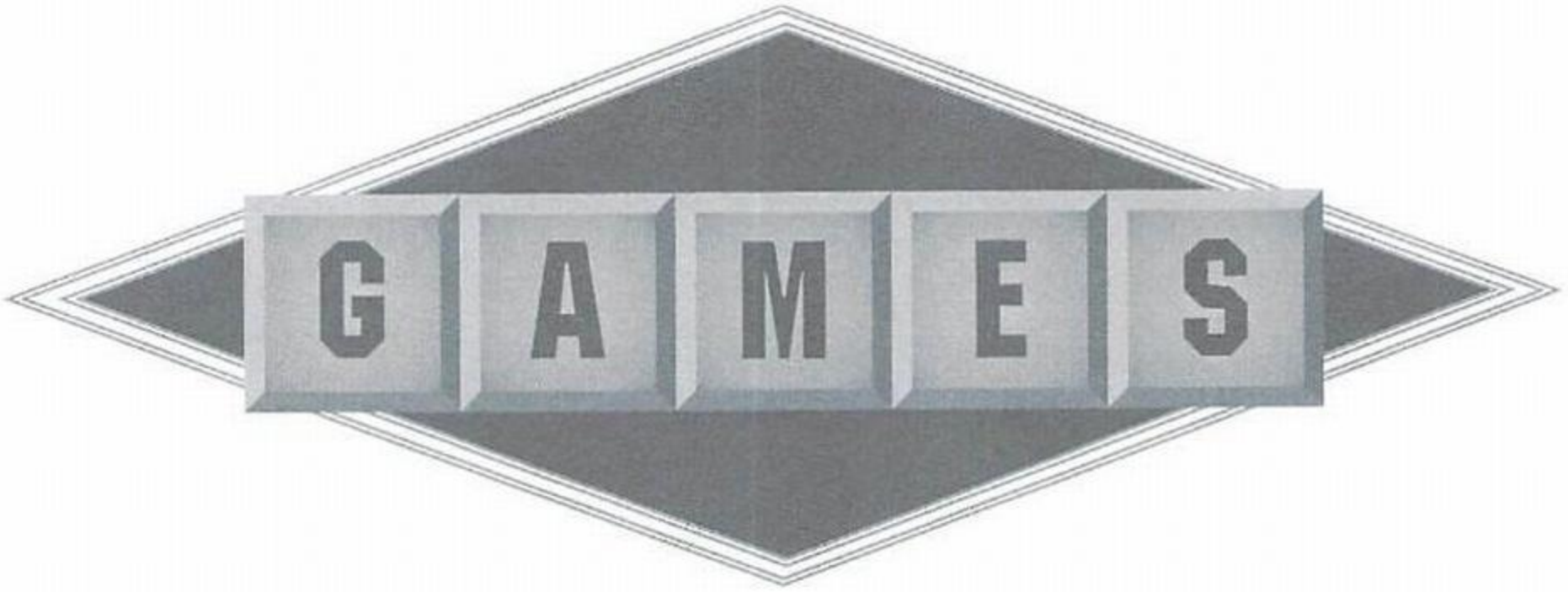

Karate Champ/Kung-Fu Master

Data East's Karate Champ/Kung-Fu Master is more than a two-pack of martial arts action games. It is a fascinating look at the origins of modern gaming, and a curiosity in that both games are early products of the company destined to create a revolution in the Commodore world.

The pack might be better named "Before There Was Mortal Kombat." Yes, arcade gaming existed before Mortal Kombat hit the scene...Karate Champ in particular is an ancestor to Mortal Kombat. The plots are amazingly similar. In Karate Champ and Mortal Kombat, two contestants (black-belt Karate masters/a highly-trained man, woman or beast with special powers), fight on a battlefield (in front of a Karate master who oversees and scores the bout/a deranged madman bent on global domination) for the noble goal of (winning a young woman's heart/saving the world from aforementioned deranged madman).

Perhaps some things HAVE changed. Still, Karate Champ is one of the first games on record which put two fighting opponents up against each other. It also had one of the most complicated control systems of its day. Whereas most games in those days got by with a joystick and a button or two, Karate Champ gave its players two joysticks and no buttons. Moves such as the Jumping Back Kick and Reverse Punch were accomplished through combinations of joystick directions. Needless to say, this could get frustrating and it is with a great deal of relief that I point out that the company which converted the game to the Commodore was kind enough to implement a humane joystick/button combination for control that is superior to the arcade joysticks. The company is none other than Berkeley Softworks, better known to some as GeoWorks, who of course gave us GEOS. The bills had to be paid to finance GEOS' development, and Karate Champ and Kung-Fu Master are the results.

Karate Champ's premise is simple enough. Either one person (against the computer) or two humans can compete. Alternately, the computer can be set to play against itself, if you'd like to watch technique. You can opt to play up to twenty matches against a computer opponent with ten skill levels. (Beware—above four or five, the computer is really tough!) Each match consists of a "best of three rounds" format. Karate Champ debuted before the concept of Mortal Kombatesque "energy" was around. Instead, combat is scored much like a martial arts tournament, where cleanly completed attacks score one-half or one point. Two points total wins the round.

If you successfully defeat the computer in the match, you are allowed to progress to a new scene and a new woman to fight for. In between, you compete in a special "bonus round", which consists of such fun activities as board breaking or bull dodging.

Karate Champ is a great action fest for you and an optional friend. While I'm a bit disappointed that Berkeley didn't push the envelope a bit more and include the arcade's digitized speech (or at least a little of it), overall I find Karate Champ to be a great game.

Kung-Fu Master rounds out the pack. Unlike Karate Champ, a protracted battle between two evenly matched opponents, Kung-Fu Master pits you the player against a legion of bad guys. Plot, as usual in these sorts of things, is sketchy but seems to involve rescuing your girlfriend from a five-story building populated by hordes of guards, knife-throwing baddies, and even such enemies as snakes. You, armed only with a good punch and a strong kick, have to take out all five floors of opponents before your mission is complete.

The idea here is to get the bad guys before they get you. There's not a whole lot of finesse involved with the blueshirt guards, just kick them off the platform before they grab hold of you and drain your energy. (If they do get to you, shake them off, but it's costly.) After clearing them out, and undoubtedly handling a few knife-throwing foes, you reach the level boss—a bad guy with special powers and weapons who starts out with just as much energy as you started your life with. Here, you'll need to stick and move to retain any hopes of getting beyond this point.

Kung-Fu Master was one of the first games to popularize the idea of player energy—just because an enemy gets near you shouldn't mean you instantly die. Berkeley made their conversion virtually perfect from the arcade action.

Whether you're looking for some serious sparring against a worthy opponent in Karate Champ, or a romp through the ranks of evil in Kung-Fu Master, there's a lot of quality action in the Data East pack. For a bit of nostalgia that won't cost you any quarters, or simply as a pair of fun games, I find it a great combination.

–Jason Compton

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The Ghost of Genghis Khan
JC Hilty Productions

Today is a dark, dreary, wet day thanks to hurricane Fran. It's too miserable to be outside or even to go shopping, but it is the perfect day for all of the Computer addicts out there. The weather is the perfect excuse for logging in a few fun hours behind the computer screen playing games. So, feeling perfectly justified, I popped an all new game into my disk drive, The Ghost of Genghis Khan.

The Ghost of Genghis Khan is the perfect game for such a rainy day. It is unlike any game I have ever experienced. The game begins by relaying the story behind your mission. The presentation of the story is unique and enjoyable. It has the look, sound, and feel of a demo due to its really terrific music and its vividly colored, bitmapped graphics. Looking at the disk files, I noticed that the music was composed with the JCH Editor, the very same program that is used to compose most demo tunes. The musical score is so good that it is available by itself on issue #140 of LOADSTAR.

The story portion of Khan takes about ten minutes to convey, but, due to the excellent presentation style, it's ten minutes you'll hardly notice passing by. Once you've seen the story, you don't have to view it again the next time you play. The game portion can be loaded by typing LOAD"GHOST*",8,1.

The Ghost of Genghis Khan places you in the role of a Time Wizard in Northern China. An electrical storm has caused a *dimensional nexxus* in time through which the ghost of Genghis Khan has emerged. Khan is confined to his empire which is surrounded by ghost warriors. Khan knows that if he attempts to leave his empire he will be banished once again to the great beyond for all eternity. As long as Khan inhabits his empire, time as we know it cannot continue. His presence erases history and the future will never have the opportunity to occur. As a Time Wizard you must find Khan and return him through the nexxus.

I must admit that after viewing the awesome intro to the game, I was a bit afraid that the actual game would not live up to the quality of the intro. Fortunately, I had nothing to worry about. The game begins by placing you right outside Khan's fortress. As you enter his domain you encounter a wide variety of ghost warriors. Each warrior species requires a different number of shots to slay. You have five lifetimes in which to make your way through the empire to Khan. Five lives was not enough for me. It doesn't take long to realize this game can't be beaten easily by one person. Fortunately, provisions have been made for two player game play with two separate joysticks. The second player assumes the role of a fellow Time Wizard and assists you in your quest.

The graphics of the game are just as bright and vivid as those in the intro. There are just enough sound effects to feed your sense of sound. If you listen really close, you'll even hear the eerie sound of the ghost warriors as they haunt the empire. The game screen scrolls downward from the top of your display. The only tip I can give you for your quest is to walk sluggishly so the screen scrolls slowly enough for yu to see the warriors before they see you. A word of caution is in order: even though a warrior may be off to the side of the screen where you can't see him, he can still see you and will continue to shoot at you.

The only downfall of the game is that the score appears at the very bottom of the screen. Even after adjusting the vertical holds on both of my monitors, I still could not view the entire score. However, I was able to make out enough of it to get an idea of how well I played.

In the past I have had the privilege of reviewing several other games from JC Hilty Productions. After experiencing The Ghost of Genghis Khan, I can surely tell you that JC Hilty Productions is devoted to bringing quality games to the Commodore Community.. I hope to see more from them in the future.

–Sherry Freedline

Zamczysko (The Castle)
Threshold Productions

Ah, another brand new game for the Commodore 64! Zamczysko is actually one of a whopping three new games entering the Commodore Arena from Threshold Productions.

Zamczysko is a platform style game played within the walls of a castle. The castle consists of a multitude of platforms, doors, and hiding places along with a host of flying bats, ghoulish grabbing hands, slithering snakes and shooting spikes. The object of the game is to find all the diamonds that have been hidden throughout the castle. To get to the diamonds, you must find keys which are also scattered inside the castle. The keys are needed to unlock the doors where most of the diamonds are hidden.

An energy bar is displayed at the bottom of the game screen. You lose a burst of energy every time you collide with one of the ghoulish creatures. The game grants you three lives. A life is lost every time the ghouls completely deplete your energy. The only real problem I encountered was trying to get to the hidden platforms while simultaneously dodging the bats. Other than that, I didn,t have too much trouble maintaining my energy supply.

The game is accompanied by some pretty nifty music. The graphics are bright and colorful and help keep you interested in the game. However, I did notice something lacking from the Threshold games: a story line. The game disk is shipped with a small white snippet of paper which includes only enough documentation to get you up and playing the game. For instance, the docs do not tell you how many diamonds have been hidden in the castle, who hid them there, or why they were hidden. The inclusion of a story line always makes the game more interesting to play.

Even with the lack of some preliminary atmosphere, the game is still fun. Zamczysko provides a nice diversion. Someday I hope I can figure out how to pronounce it.

–Sherry Freedline

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It All Adds Up To...

geoCalc

by Andrew Fisher

GeoCalc is one of the additional applications produced by Berkeley Softworks/Geoworks for use with the GEOS System, but it can do a lot more than just add up your finances or expenses.

Starting up

GeoCalc's ring-bound manual is full of helpful hints, and your starting place should be: How To Install The Program. Once you have installed it, I suggest you copy it to the fastest possible drive, which are in order fastest to slowest:

1. RAMLink/RAM Expansion Unit.
2. FD/HD/GEORAM.
3. 1581/1571 (faster in 128 mode).
4. 1541.

GeoCalc needs to access the disk frequently to update the file and select the program modules Top tip! When using an REU, make sure you copy the file back to a real disk when you finish.

Finances

Of course, the primary use of a spreadsheet is to lay out your expenses and income (and hope the latter is bigger than the former!), but even then there is more to geoCalc than simple figures. You can write equations to total a set of figures, calculate average expenditure, and even calculate interest payable on a payment. If you want to impress the accountant or bank manager further, transfer your figures to geoChart, and blind him with pie charts and graphs comparing your expenditure for the past financial year etc. etc. (see sidebar for more on geoChart).

Sporty Types

You don't have to use a spreadsheet to just keep figures—how about sports? Baseball fans can keep a track of their team's performance, or see how one player's fortunes change over a season. As a Formula 1 Grand Prix fan, I like to follow the results of the championship, entering each driver or team in a row, making the column headings the names of the races (or an abbreviation to save space: e.g. GBR for the British Grand Prix, EUR for the Grand Prix de Europe etc.) I enter the figures race by race and get a total (this requires results for those that did not finish or did not take part to be entered as 0). It is also possible to simply enter the total manually, and record the exact results for visual presentation (a slash (/) is a good indicator for an empty box).

Here, in the United Kingdom, one of the hottest trends is the Fantasy Football League. You choose a team of soccer players and score points according to their performance (a hobby for sports fans in the United States for several years). Enter your team into a spreadsheet, and update the figures weekly. In this case, variation is necessary in titling the headings. The player number/position is used as the column heading and the week numbers are along the side (allow space for transferred players).

Keeping Score

If you want to play board or card games, design and print out a score sheet with geoCalc. It prints boxes (which can be turned off), so you don't have to waste time lining things

Graphically Speaking...

In issue 9 of Commodore World, a review of geoCalc and other spreadsheets hinted that it had no graphing facility. The reason is these tools are available in the separate graphing program called geoChart. GeoChart is very easy to use. The data is input in the form of a text scrap (meaning it can come from geoCalc, geoFile, geoWrite, and Version 2 of the notepad: pressing <commodore><c> to copy the data to a text scrap). Having got your data into geoChart, select the data you want displayed. You may have 3 separate columns of figures displayed on one graph, or you might highlight the column containing percentages to allow you to draw a pie chart or unibar.

It is also possible to plot points or lines, an x-y scatter plot, area graphs, and standard bar and column charts. You can alter the appearance of the labels (or remove them completely), the patterns or the shape of the points used to mark each section, and even alter the scaling (although, geoChart's auto-scaling will handle all but the trickiest graph). Your finished graph can then be saved as a photo scrap (select the proper size of photo scrap to save—depending on use in geoPaint, geoWrite or geoPublish, which can all handle different sizes of scrap), or printed out immediately. And, having learned to use one GEOS application, learning another is easy (thanks to the excellent manual and tutorials, and the intuitive point and click environment that makes GEOS so much fun).

- AF

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up in geoPaint.

If you play the lottery, keep track of your winnings and expenditures in a spreadsheet. It is even possible to calculate whether you've won more than you've spent. If you want to go a step further, geoCalc can pick your lottery numbers for you! How? With the following formulae.

In geoCalc, you have a blank spreadsheet with the cursor on square A1. Click in the entry bar at the top, type an equal sign (=), then click on "paste function" in the "option" menu. Scroll through the list until you find *rand*, then click it and click ok. This is the random number function.Every time you paste it into the square and the sheet is recalculated, a new random number is generated. With me so far? Click the tick icon or press return. The formula *=rand()* is now entered in cell A1. Click A1 so it is the selected square-the formula will appear in the bar at the top. Go to the "display" menu and click on format. Choose 0.00—this will display our random number to 2 decimal places (otherwise it will show up as ### in the general format).You will now discover that *rand()* produces a random number between 0 and 1 to 12 decimal places, whereas we need a number between 1 and the top number in your lottery (the UK national lottery uses 49, so I'll use that in my examples). How do they do that? Click on A2 and type an equal sign (=), go to the paste function again and select *int()*. *Int* returns the integer (whole number) of a given value or cell. Now, comes the clever bit. Between the brackets that follow *=int*, type *A1*49*. After the close bracket, add +1. This will now turn our random number in a1 into a whole number between 1 and 49 displayed in A2. To get 6 numbers, highlight A1 and A2. Select copy <commodore><c> from the edit menu. Now highlight B1-F2 and select paste <commodore><t>. The random number function will be in cells B1-F1, with the int formula in cells B2-F2. And, with the wonders of GEOS, the formula is recalculated according to position. So B2 refers to B1, C2 to C1 etc. If you should get a repeated highlight the two squares and paste the two formulae in again!(Note to all lottery players: in Britain we have to put up with the predictions of a weird middle-aged lady called Mystic Meg. Like a lot of people, I want to hire an assassin with my winnings, but if she can predict the future, what's the point of trying to kill her?)

"(GeoCalc) can do a lot more than just add up your finances or expenses." -AF

Conclusion

I hope this excursion into the wild and wacky realms of advanced uses of geoCalc has not been too mind blowing (to really blow your mind, try smoking dynamite!). If you are interested, CMD still has geoCalc (in separate 64 and 128 versions—0mouse, printer, and second disk drive recommended) available. The 128 version adds support for 80 columns, allowing you to see very large spreadsheets or two sections of the same one (with a suitable monitor), and the ability to use the numeric keypad.

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Carrier Detect

By Gaelyne R. Gasson

IRC CHATTER

Lately, whenever I hear the overused cliché "cyberspace", I think of IRC. It really is a world unto itself. A place where reality and imagination blur while you chat with people from around the world. IRC is unique in that it can be used for work or for play. Useful information abounds, but when you feel like unwinding, you can find a place to enjoy an imaginary beer or get into a "food fight" (minus the mess!).

Until recently, I was an IRC "newbie". I was skeptical about venturing into the land of the unknown, but the spirit of adventure finally won out. After spending time chatting on-line, I realized it can be a great way to find things out, ask questions, and enjoy the company of others. IRC gives people around the world the ability to communicate. You can participate with a group of people, have a private conversation, or do both at the same time. IRC gives you the ability to send and receive files without missing any of the on-line action.

IRC can be addicting, and this article may never have been finished had I not dragged myself away. While doing research, I needed to check on a few things for this article and would join IRC, only to find myself involved in conversation and forgetting the time. At one point I found myself eating imaginary pizza and having a beer with a group of fun-loving people. It was great, but I certainly wasn't getting much writing done. When I mentioned this problem on-line, I was asked NOT to write about using IRC. Why? The more people it attracts, the more problems there are with overloaded systems, in turn causing long delays between responses ("net lag").

IRC commands are not as complex as they look at first glance. In practice, I found these commands to be pretty straight forward. You don't need to know all of the commands to explore IRC. Let's start a session to show what it's like, and along the way explain using the more common commands.

Beginning an IRC session depends on the type of Internet service you have. If you're using a menu system or Delphi, begin by selecting "IRC" or "Internet Relay Chat". When using a UNIX shell account, type "irc", or you may need to tell the system which IRC server to use. An IRC server is used to connect your Internet connection to the outside world. A few IRC servers are listed in the sidebar-just pick one and type the command in the format of: "irc <server>". For example:

```
irc irc.cdc.net
```

The screen will clear and you should see a message from the IRC server, called the "Message Of The Day" (or MOTD). You will see your user name and a prompt at the bottom of the screen. This is known as "channel 0," which is a quiet area (no conversations in this area) used to change your nickname and set other specifications before joining a channel.

A nickname can be up to nine characters long and can be pretty much anything, provided no one else is using it. There's no rule stating you must have a nickname to join a channel, but it looks better than "Bob1204". To change it, type: /nick and then whatever name you want to give yourself. I'm not very creative, so I often just use my initials:

```
/nick GR.
```

Most of the information I've found on the subject of IRC suggests you list the available IRC channels. I wouldn't recommend this. It doesn't make sense to start a list of thousands of channel names when there are easier ways to go about it. A frustrating problem I experienced at first is that the text doesn't automatically page or stop, but just flows continuously. For example, if you try listing the channels they'll scroll continuously until it reaches the end—about five minutes after you've pressed the enter key. The command "/set hold_mode on" will pause the text every twenty lines, and the word [HELD] will appear on the info line at the bottom of the screen. If there are ten or more lines held, it will tell you how many lines are yet to be read. Press the return key to read the next twenty lines. On really active channels this can make a big difference in your use of IRC. If at anytime you decide you don't want to see the held text, just type "/flush". This doesn't turn off hold mode, it just wipes out any text that's currently being held.

Channels

A channel is to IRC what a conference or an echo is to messages. Usually (but not always), the name of the channel implies what the topic of conversations are about. There are general chat channels, and there are also topic specific ones, such as the #c-64 or #html channels mentioned

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earlier. General chat channels have names like #chat, #coffeehouse, #chatcorner, etc. The hash mark (#) shows that it is a public channel, and when you join a channel you must type the hash (#). You will never see a private channel listed. If you "join" a channel that doesn't exist, the IRC system creates it for you. This is important to know in case you misspell the name of a channel and wonder why you're the only one in it.

A word of warning: IRC is one area of the Internet where free speech is very evident. You may see channel names that you find offensive. You can be selective in finding a channel by using wildcards when you list the channel names. This is useful when you want to find out if a channel exists, or to check the exact spelling. To list channels that begin with "irc", the command is: /list #irc* (don't forget to include the hash mark). You'll see choices like #ircclub, #ircbar, and #ircnewbies. A way to find a channel with users in it (it's no fun chatting with yourself, after all), is to type /list -min 20. You'll get a list showing only those channels with twenty or more users. Substitute the number with any of your choosing. The list you get back will look like this:

```
#ircnewbies 22  Welcome to
#ircnewbies! Come in to chat
or ask questions
#HTML   30  Q&A  Ask your
questions here.
#coffeeHaus 20  Get your Java
here!
```

Once you know the name of the channel you are interested in, joining is easy. Type /join and the channel name. Text will appear announcing your arrival to the others and you will see a list of other users on the channel. If it's active, you'll see comments and messages from the current discussion. It is similar to walking into a room full of people and catching bits of conversations taking place around you. It's OK to "lurk" or watch for awhile before joining in. There are many people who don't join in, but enjoy IRC as observers. On some channels, you'll get an immediate welcome, such as:

```
<Cheerful> Hi GR! What's up?
```

Cheerful is the "nick" (nickname) of the person speaking to me. I can answer by simply typing my reply. My reply won't go out for others to see until I press the return key. If I make a mistake, I can always cursor to it and change it. I typed "Hi Cheerful—nothing much—why are you in such a good mood?" and pressed return. Whenever I type something, it appears

IRC Commands at a Glance

/help
View the help menu.

/help <topic>
Get specific help. Ex: /help list

/nick <yournick>
Changes your nickname.

/set hold_mode on
This mode pauses the text every twenty lines. Press the return key to view held text.

/flush
Wipes text that's currently held.

/clear
Clears screen

/list
Lists ALL the public channels. (not recommended)

/list #a*
Lists channels that begin with "a". This is NOT case sensitive.

/list–min 20
Lists channels with a minimum of 20 people in them.

/join <#channel>
Join a channel.

/join–invite <#channel>
Lets you join a channel once you've been invited into it.

/set novice off
This mode lets your follow more than one channel.

/leave <#channel>
Leave a channel.

/whois <nickname>
Get info about an IRC user.

/who *
Displays list of users in current channel with added info.

/names <#channel>
Displays list of users in a channel.

/mode <nickname> +i
Makes you "invisible" to others.

/ignore * crap
Ignore all system messages.

/ignore <nickname> all
Ignore all messages from a user.

/ignore <nickname> none
Un–Ignore messages from a user.

/ignore <nickname> msg
Ignore private /msgs from a user

/ignore <nickname> -msg
Un–Ignore private /msgs from a user.

/ignore <emailaddress> all
Ignore all messages from a specific user.

/msg <nickname> <text>
Send a private /msg to a user.

/query <nickname>
Start a private conversation with another person. The recipient must respond with:

/query <yournick>./query
Ends private conversation.

/me <action phrase>
A means of displaying text with your name differently for fun.

/server <servername> <port>
Change to a different IRC server. Example: /server irc.cdc.net 6667

/ping <nickname>
Find out how many seconds it takes to reach the person's server.

/dcc send <nickname> <filename>
Begin a file transfer.

/dcc get <nickname> <filename>
Begin receipt of a file.

/dcc chat <nickname>
Start a DCC chat. The other party must do the same.

/msg =<nickname> <text>
Send DCC chat messages once chat is started.

/dcc list
List any DCC file transfers or chat modes in operation.

/away <text>
Tells others you won't be paying attention for awhile.

/exit /quit /bye /signoff <text>
Exit IRC.

Useful Control-keys for Editing

CTRL–P Recalls previous command line (Also: cursor-up)
CTRL–N Recalls next command line (Also: cursor-down)
CTRL–A Moves the cursor to the beginning of the line
CTRL–E Moves the cursor to the end of t he line
CTRL–K Kills from the cursor to the end
CTRL–Y Reinserts the last stretch of killed text
CTRL–U Clears the whole line
CTRL–L Redraws the screen

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IRC and Unix Shell Accounts

If you're using a UNIX shell account, you can set a few things that will make your use of IRC more enjoyable. Create a file named .ircrc and in it put any of the commands you would normally use when you first start IRC. The slash doesn't need to be used. Here's an example of an .ircrc file:

```
set hold_mode on
nick GR
join #c-64
```

The IRC FAQ (Frequently Asked Questions) file has an excellent sample .ircrc file in it that I imported into my own .ircrc file. It lets you type one letter commands instead of the entire word (also has a few other options). The FAQ file can be found at: cs-ftp.bu.edu:/irc/support/alt-irc-faq.

different to the other text on the screen. I would see this as:

```
> Hi Cheerful-nothing much-
why are you in such a good
mood?
```

Others would see it as:

```
<GR> Hi Cheerful-nothing much-
why are you in such a good
mood?
```

It is possible to join more than one channel at a time. This is convenient when you are in a quiet channel and waiting for someone to join you. Meanwhile, you can follow conversations in other channels. Sometimes two channels just aren't enough. To join multiple channels, you'll need to turn off your "newbie" status. Type:

```
/set novice off
```

This is about the only effect this command has. You can only type in the immediate channel, (the last one you joined), but you can shift to the other by "joining" it again. The system will let you know when you make the switch:

```
***You are now talking to
channel #horsepuck.
```

It's easy to locate the channel a person is speaking from, as their messages appear with the name of their channel right after the nickname they are using:

```
<Cheerful: #ircnewbies> Hi GR!
What's up?
```

If it gets difficult to keep track of all the channels you have joined, you can always leave a specific channel by typing: /leave followed by the channel name. For example:

```
/leave #ircnewbies.
```

Useful Editing Commands

There are several control key commands for use when typing in the editor. Use CTRL-a to move the cursor to the beginning of the line, and CTRL–e to move to the end of the line. CTRL–u will erase the entire line so you can start again. IRC also keeps tracks of the commands you've sent. To reuse a command (or call it up for editing), press the shifted cursor up/down key (i.e., cursor up).

People commands

There are ways to learn about other IRC users and find out who is in a channel. Let's see what we can find out about Cheerful. The command is: /whois <nickname>. Be sure to type the nickname exactly as it appears. The system will return with a message only you can see:

```
/whois Cheerful

*** Cheerful is bashful@email
.com (6 Dwarves: one with a
Dual Personality)
***on channels #ircnewbies @#
DwarvesRCool #phychotic
***on irc serveirc .somewhere
.com (Some IRC Server)
***Cheerful has been idle 2
minutes
```

Note: on some systems, the E–Mail address shown (on the first line) may or may not have the user's real username. The information in parenthesis can be defined in your environmental files if you use UNIX. It usually defaults to showing the person's real name or their user name. As you can see, Cheerful is on more than one channel, and this gives you an insight as to their interests. The example also shows what server they're using. Servers connect you to the outside world beyond your Internet Provider. There are hundreds of different servers you can connect to and use. To change servers, type / server <servername>:

```
/server irc.cdc.net 6667
```

The number in the example is a port number—an additional "address" that many systems have which allows more users at a time and sometimes better access depending on the port. You can change servers without leaving the channels that you're in. Sometimes it helps if you're connected to a slow running service.

Who's on #First?

If you want to see who is on your current channel, you can type:

```
/who *
```

On some systems, this will give you a list of the nicknames of the people using the channel. On others, you may receive a message saying "You don't want to do that". This means it assumed you were asking for the nicknames of everyone on every channel (eek!). If you're not in a channel you can use /who <channel name> to find out who's already there. For example:

```
/who #DwarvesRCool

Cheerful [H@irc.somewhere.com]
is (6 Dwarves: one with a Dual
Personality) on #DwarvesRCool
Dopey[H@irc.some.com] is
(Dopey Dwarf) on #DwarvesRCool
Sleepy [G@irc.nowhere.edu] is
(Sluggish Diminutive) on
#DwarvesRCool
```

Newsgroups with information about IRC:

```
alt.irc
alt.irc.ircii
alt.irc.questions
```

There are also newsgroups that cover different IRC networks, such as Efnet, Dalnet, or Undernet. If you're looking for a list of servers for these networks you can find them in these groups. The information is usually posted about once a week. There's also info on the following WWW sites:

```
http://www.irchelp.org
http://urth.acsu.buffalo.edu/irc/
WWW/ircdocs.html
http://www.dal.net
http://www2.undernet.org:8080/
~cs93jtl/Undernet.html
```


http://www.oldgamesitalia.net/ http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

The letters H and G appearing before the person's server name shows whether they are present (the "H" for "here"), or if they've been marked as away (the "G" for "gone"). Also of note is that this command does not show any additional channels the user may be following. A shorter variation for finding out who's on a channel is /names <channel name>. This displays the nicknames of users without additional text:

```
/names #DwarvesRCool
```

Going Invisible

If you don't want others to know you're in a channel, you can make yourself "invisible". This can be useful if you're feeling a bit shy and don't want to jump in head first. You will still be visible to any channel operators, but not to anyone else. When someone lists the nicknames of users in a channel, yours won't appear. If you're going to make yourself invisible, do it *before* joining any channels, otherwise the system will show a message saying you've made this change, defeating the purpose. The command to turn invisible is /mode <your nickname> +i:

```
/mode GR +i.
```

Joining an Invitation Only channel

As I mentioned previously, some channels are invitation only. This doesn't mean you can't participate in them, it simply means you will have to ask for an invitation from a channel operator. A channel operator is a person who has either created the channel, or who has operator ("op") status. When you list the names of people on a channel by using:

```
/who #channelname
```

or:

```
/names #channelname
```

you will see that some users have an "@" symbol before their nickname. The @ symbol represents the channel operator status gives them the power to invite users into the channel, kick annoying users out, and have other superior powers. To join an invitation only channel, use the above commands to find out who has "ops", then send them a private message (see below) asking to be invited (no need to type the @ symbol when typing their nick name). This doesn't guarantee an invitation, but you'll never know if you don't

IRC Servers

Most IRC programs default to contacting other IRC servers with a specific port number, usually 6667 or 6668, but sometimes a differentport number is needed to connect to a specific server. This is noted by a number following the server name. To connect to a different IRC server port, the command is:/server <server> <port> For example:

```
/server toronto.dal.net 7000
```

There are several different IRC "Networks", and each have their own servers. Here's a list of IRC servers for the most common networks in current use:

EFNET

Serverlist—http://www.comco.com/dougmc/irc-stats/server-list.txt

anarchy.tamu.edu
azure.acsu.buffalo.edu
irc-2.mit.edu
irc.ais.net
irc.best.net
irc.blackened.com
irc.bridge.net
irc.bt.net
irc.bu.edu
irc.calpoly.edu
irc.caltech.edu
irc.cdc.net
irc.cerf.net
irc.colorado.edu
irc.cs.rpi.edu
irc.diqex.net
irc.epix.net
irc.frontiernet.net
irc.gate.net
irc.io.org
irc.ionet.net
irc.law.emory.edu
irc.mcs.net
irc.mit.edu
irc.mo.net
irc.neosoft.com
irc.phoenix.net
irc.portal.com
irc.primenet.com
irc.spyder.org
irc.stanford.edu
irc.stealth.net (Ports 5550-7000)
irc.texas.net
irc.ucsd.edu
irc.uiuc.edu
irc.umn.edu
irc.usa.pipeline.com
irc.voicenet.com
irc.winternet.com
irc2.ais.net
irc2.epix.net
irc2.stealth.net
irc2.uiuc.edu
joyce.eng.yale.edu
organ.ctr.columbia.edu
pegasus.ccs.itd.umich.edu
piglet.cc.utexas.edu
red-dwarf.cit.cornell.edu
seltzer.csua.berkeley.edu
world.std.com
irc.cs.mun.ca (Canada)
irc2.magic.ca
irc.magic.mb.ca
irc.mcgill.ca
portal.mbnet.mb.ca
yoyo.cc.monash.edu.au (Australia)
irc.omen.com.au
ircd.funet.fi (Finland)
irc.powertech.no (Norway)
irc.nada.kth.se (Sweden)
london.uk.pi.edu (United Kingdom)
serv.cs.man.ac.uk
stork.doc.ic.ac.uk
serv.eng.abdn.ac.uk

Dalnet
(Most are ports 6668 and 7000)

Serverlist - http://www.xmission.com/~dragon/dalnet/server.html

cin.dal.net
dragon.dal.net
glass.dal.net
groucho.dal.net
phoenix.dal.net
skypoint.dal.net
uncc.dal.net
usd.dal.net
toronto.dal.net 7000 (Canada)
liberator.dal.net (England, UK)
xgw.dal.net (Finland)
armidale.dal.net (Australia)

Undernet
(Most are ports 6667)

Serverlist - ftp.undernet.org /pub/undernet/servers

Norman.OK.US.undernet.org
Manhattan.KS.US.undernet.org
Milwaukee.WI.US.undernet.org
Davis.CA.US.undernet.org
Austin.TX.US.undernet.org
Rochester.MI.US.undernet.org
SanJose.CA.US.undernet.org
Washington.DC.US.undernet.org
Charlottesville.VA.US.undernet.org
Pittsburgh.PA.US.undernet.org
Bloomington.IN.US.undernet.org 7000
Montreal.QU.CA.undernet.org (Canada)
Delft.NL.EU.undernet.org (Europe)
Vienna.AT.EU.undernet.org
Oslo.No.EU.undernet.org
Gothenburg.Se.EU.undernet.org
Oxford.UK.EU.undernet.org
Wollongong.NSW.AU.undernet.org (Australia)
akl.nz.undernet.org (New Zealand)

NewNET

irc.eskimo.com
irc.owt.com
irc.wko.com
irc.autobaun.com
irc.icanet.com
irc.txdirect.net
rc.gymnet.com
irc.pacific.net.sg

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try. If the channel operator invites you to join the channel, the system will send you a message. To join, type /join-invite #channelname. For example:

```
/join -invite #Dwarves
```

While following the action in a channel, you may get a flood of information such as:

```
*** SoAndSo
(someone@nowhere.com) has
joined channel #ircnewbies
*** JustLeaving has left
channel #ircnewbies
```

This can really interrupt the flow of conversation. If you don't want to see this text, you can send the command:

```
/ignore * crap
```

(Yes, the command really does include the word "crap".)

If a fellow user is sending messages which you find annoying, and you wish not to receive any further messages from this user, you can "ignore" them for the remainder of the session. Recently, someone continuously sent me annoying messages—many of them all at once. This is called "flooding", and it is uncool, as it can cause the server problems. The only way to stop this nonsense is by ignoring the sender. Type the following command:

```
/ignore Twit all.
```

The middle portion of the command is the nickname (in this case, "Twit"). You can specify the types of messages to ignore, but in a pinch, "all" is a good one to use. To un-ignore all messages from a user (if you've had a change of heart), the command is:

```
/ignore <nickname> none
```

To ignore only the private messages, someone is sending, the command is:

```
/ignore <nickname> msg. (To
undo this, it's /ignore
<nickname> -msg)
```

Once in a while, you may find someone that changes their nickname just to hassle you and others. There is a solution:

```
/ignore <emailaddress> all
```

The user can change nicknames as frequently as they want, but, you won't see anything further from them.

I know this makes it sound like IRC is full of idiots and troublemakers, but this really isn't the case. Still, it's good that there are ways of handling troublemakers when and if you run into them. Wouldn't it be great if there were a way of /ignoring this type of person in the "real world"?

Sending and Receiving Private Messages

There are times when you want to make a side remark to just one person, and IRC has a means to do this. Let's say I wanted to ask Cheerful where Snow White is living, but wanted to do it outside of the public conversation. I would type:

```
/msg Cheerful Where's Snow
White living these days?
```

After pressing return, I'd be able to tell that I sent a private message because on the screen, it would appear as:

```
-> *Cheerful* Where's Snow
White living these days?
```

Cheerful would know they received a private message because it would appear as:

```
*GR* Where's Snow White living
these days?
```

On the information line at the bottom of the Cheerful's screen, it will show "Last: GR". To reply to the message in private, use the same format:

```
/msg <nickname> and the rest
of the message
```

Don't forget to use the /msg <nickname> before your reply as otherwise it will go out in public. On some systems, you can type /r and then your reply, and your message will go to the last person that sent you a message. Be careful with this shortcut, because while you're typing, someone else may message you- and your text would go to that person instead of the intended. This is when knowing that CTRL-a will move the cursor to the beginning of the line can be very useful.

If you get into a long private conversation using /msg, you might want to join a private channel, or you can use the /query command to start a conversation in private. To initiate a private conversation with Cheerful, I would type:

```
/query Cheerful
```

Cheerful would receive a note telling him I had queried. I'd see:

```
*** Starting conversation with
Cheerful
```

Cheerful would see:

```
***You have been queried by GR
```

To start our private conversation, Cheerful would type:

```
/query GR
```

From that point on, we wouldn't need to type /msg before typing any text to the other person, because we'd be in our own "mini channel". Meanwhile, both Cheerful and I can follow the conversation going on in the regular channels. To exit this mode type /query.

Private Channels

Starting and joining a private channel is just as easy as joining a public one. Pick a name no one will guess and use the /join channel command but leave off the hash mark from the name:

```
/join SnowWhite
```

But remember, you'll have to tell people the channel name if you want anyone to be able to join you.

Silly Stuff

When conversing with others, you might want to describe your actions in the third person. For example, "GR hands Cheerful a tissue and says, Cheer up, mate!" There's an IRC command which allows you to do this. The text appears different from regular text on a channel. To use the above example, I would type:

```
/me hands Cheerful a tissue and
says, Cheer up, mate!
```

When the others on the channel view your message, they will see:

```
*GR hands Cheerful a tissue
and says, Cheer up, mate!
```


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Commodore IRC Channels

Channel	Network	Day/Time
#c-64	EFNET	24hrs a day
#c64ntsc	EFNET	Thursday Evenings
#c-net	EFNET	Sundays 3PM EST
#QWKRR	Dalnet	Thursdays 9PM EST

Away and Signing Off

If you're going to be away from the computer for a bit, but don't want to exit IRC, you can tell people that you won't be following the conversation. Type /away and some witty text after it:

```
/away feeding the plants
```

This will send a message to the channel saying you're away feeding the plants, and if someone should send a message to you while you're away, they'll receive a notice telling them the same.

When it's time to quit, you can do so by sending any of these commands:

```
/exit  /quit  /bye  /signoff.
```

You can add text to say why you're signingoff too, if you wish:

```
/signoff Gotta go to work
```

The Good Stuff

CTCP (Client To Client Protocol) is a method for two IRC programs to communicate directly with each other. You can use it to find out more about other people, or to chat privately with others without IRC operators eavesdropping. It also lets you transfer files. I anticipated this to be very difficult, but it turned out to be no big deal. For instance, I can use CTCP ping to find out how many seconds it is between my connection and Cheerful's by typing /ping Cheerful. This tells you the relative current speed of the network.

File Transfers

For sending and receiving files, it's about as difficult as starting a download from your home directory. If Cheerful has a text file with trivia about the Seven Dwarves, and offers to send it to me, he'll type:

```
/DCC send GR 7dwarves.txt.
(The file should be in
Cheerful's home directory).
```

Then the system sends a message anouncing:

```
*** DCC SEND (7dwarves.txt)
request received from Cheerful
```

I respond with:

```
/DCC GET Cheerful 7dwarves.txt
```

A few seconds later the system sends me another couple of messages:

```
*** DCC GET connection with
Cheerful established
*** DCC GET filename connection
to Cheerful completed
```

The file transfer completed. When I quit IRC, the file will be in my home directory, ready to download. Cheerful's only involvement was sending the message to start the DCC send. When the transfer finishes, Cheerful will receive a message from the system telling him it's completed. Unfortunately, the system I've been using has been pretty slow lately, and the file transfers haven't been that quick. This was useful to me though, I was able type the command "/dcc list" and see what files were being transferred and how many I'd received so far. Once the files are in your home directory (or workspace), you can download them to your computer.

DCC Chat

DCC Chat lets you chat privately with another person. This is similar to the /msg command, but the messages are sent directly to the user's client program instead of through the entire network. To chat with Cheerful, I'd need to type /dcc chat Cheerful. He (or she) would have to type the same, using my nickname. This establishes the DCC Chat connection. Then, whenever I send Cheerful a private message, I type /msg =<nickname> <text>. For example:

```
/msg =Cheerful Hi! This is
private.
```

Notice, this is nearly the same as /msg, but with the addition of the equal sign before the username giving security to private conversations.

Delays

There are times when the IRC server is overloaded with users and it becomes very slow. There can be a delay between the time you type, and when the results are displayed. Sometimes this can take five to ten minutes, or longer. When this happens, you might try changing to another server. A server may become so overloaded with users that it temporarily disconnects from the rest of the Internet. This is called a "netsplit." When this occurs, users from one server are dropping out of the channel in droves. If this happens to the server you're using, either wait a minute or two (usually it'll reconnect), or find another server. Usually when your server is disconnecting, there will not be any response to typing.

Not all delays are from "net lag". Recently I had the good fortune to chat with a Commodore user in Russia. He was receiving my comments within a reasonable time, but for a while I thought his replies were taking a long time because of net lag. It turned out that he was using a Russian/English dictionary to translate my comments and to formulate a reply in English. Obviously, that's no small task and can take a few minutes, if not several. IRC is a world-wide system, and not all IRC channels are in English.

General Hints and Tips

Some people really get a thrill out of tripping up newbie IRC users. If someone suggests that you type a command, don't do it unless you know for sure what it does. You can verify most commands by typing /help and then looking it up in the help menu that appears. The #ircnewbies and #irchelp channels are manned by genuinely helpful people, but sometimes someone out to prey on new users will create a similar-named "newbie" type channel just to snare new users. If you join a channel, watch and make sure the help others are getting makes sense before asking for help. Although it probably doesn't need to be said as it should be common sense, never give out your password.

Wrap Up

IRC isn't for everyone. I was sure it WASN'T for me when I first began, but I've come to enjoy using it. It's fun and I really like the ability to find quick answers from a person when dealing with UNIX or other Internet questions. My attitudes have changed so drastically that I have a channel for meeting with other Commodore users. Instead of hanging out in IRC waiting for visitors, I've let others know that I'm available on the #QWKRR channel Thursday evenings from 9PM EST until whenever. The topic is pretty much anything relating to Commodore, not just the program named QWKRR. The #QWKRR channel is on the Dalnet Network, which have IRC servers listed in the sidebar. Come and join me sometime!

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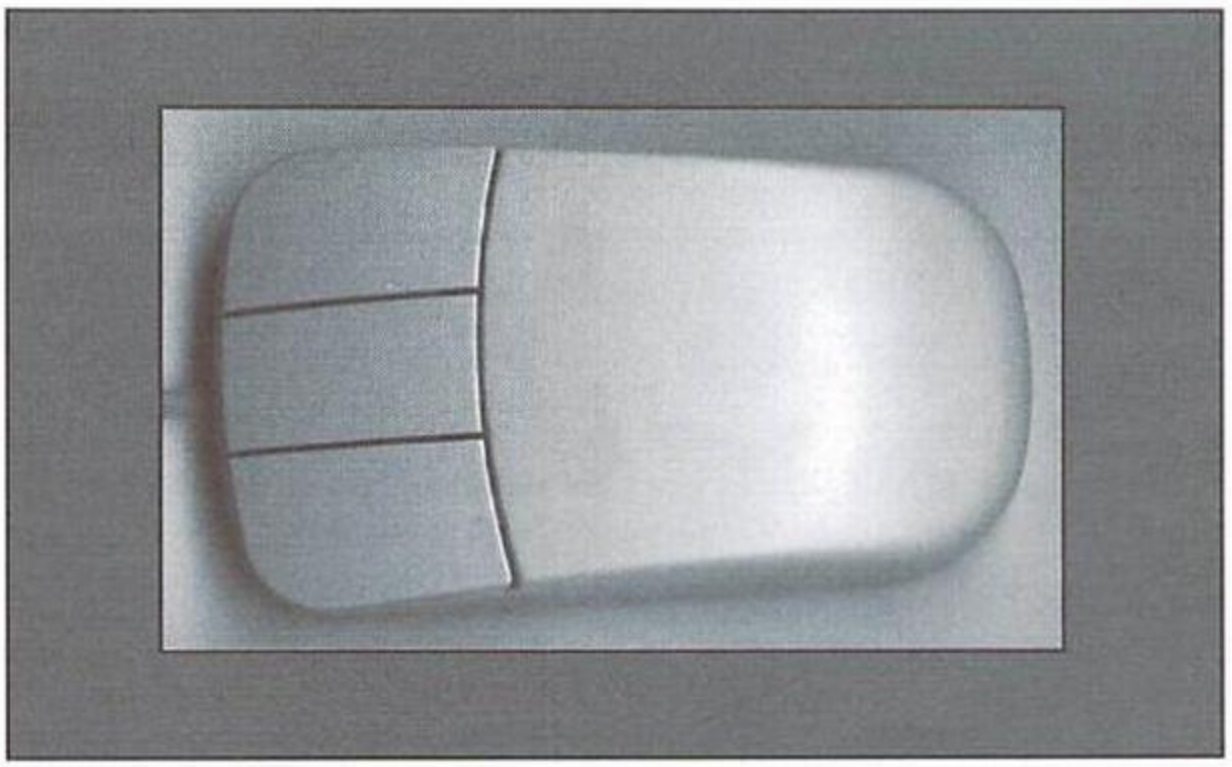
HARD TIPS

MOUSE MATTERS: MOUSE TIPS & MODIFICATIONS FOR MODE SWITCHING

By Bruce Thomas



Rodent Slang

Shortly after I bought GEOS in the spring of 1988, I upgraded to a 1351 mouse and a 1764 REU (now with 512K), allowing me to showcase the abilities of the C64 by using GeoPublish to create half of our club newsletter, with output going to the same Laser Printer the Amiga half used. In the July 1988 issue, I ran a definition created by our club president. This new word had been posted on the club BBS and had to be shared with the non-modem equipped members. As with most computer terms, it must be used for some time before really becoming accepted and, eventually, making an appearance in the dictionary. Here is, at the ripe old age of 8 years, what could become the newest computer slang.

Rodentiate: (from Rodent (n.) + iate (v. suf.)) (v. intrans.) 1 To move a pointer by use of a mouse device; use with "TO" and "FROM" (e.g. To pull down the menu, *rodentiate* to the top of the screen, and press the left button) (My 1351 mouse is great for rodentiating!)

Care and Handling

To keep my 1351 working properly I take a few precautions. First and foremost, I always use a mouse pad. A quality mouse pad makes using the mouse much easier. The top surface is smooth; most feature a cloth cover on a foam rubber backing. A pad provides a stable environment for your mouse to move on, and as with stables for larger animals, you'll want to keep this one clean,too. Every week or so you should brush off the surface, keeping it free of dirt and dust buildup.

To keep your mouse truly happy, the above precautionary process alone isn't enough. About every two months, it is a good idea to flip your mouse over and remove the ball. The ball allows your mouse to "feel" how far it has moved across your mouse pad so it can tell the computer how far to move your pointer/sprite. The ball is usually held inside the mouse by a small plate that rotates or slides to a position where the ball can be removed by turning the mouse right side up. Don't forget to catch it, as losing the ball is the easiest way to ruin a mouse!

Inside the mouse, you'll see three small rollers. They rub against the ball and translate the movement into signals which are sent to the computer. It is necessary to check these over very carefully. If your mouse pad or surface is not completely clean, it's likely the rollers are dirty. The best way to clean them is with a dry cotton swab, or one wet with rubbing alcohol. A small hobby knife can be used to scrape stubborn lumps off. The axles the rollers spin on are a favorite spot for dust or hair to collect, and should also be cleaned (a pair of tweezers works best).

Many people forget to check the connector that plugs into the computer from the mouse. If you have to unplug the mouse, make sure you unplug it from the gripping area and not by pulling the cord. Carefully work the plug until it comes out. Be equally careful when inserting it back into the connector. I recently bought a used 128D that had one pin bent over in the Joystick port. Luckily, I was able to carefully straighten it out, but if you break a pin off, be prepared for a lot of work to replace the connector. I solved part of this problem by setting up a second system with two Joysticks for my children to use for games, eliminating the need to unplug my mouse.

Lastly, keep your mouse covered when not in use. There are lots of cute little covers a person can buy, but they aren't necessary. Just a small dish cloth will do to keep the dust from settling on the mouse when not in use.

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Program Patches

When using a mouse, as with almost anything else, problems invariably arise. One such problem was with RUN Paint (the graphics program published by RUN Magazine). In the November 1989 issue, a 'cure' was provided modifying RUN Paint to work with a mouse in only Port 1. The question of mouse trouble with RUN Paint again surfaced when CMD introduced their SmartMouse to the market. In Issue #2 of "Commodore World (CW)" magazine a fix was published in the TOP TIPS column. Apparently the problem had nothing to do with the mouse in use, but with a required internal delay for reading Port 2. With this CW patch the program works as originally intended with a mouse in Port 2. Contact CMD for a copy of this issue if you regularly use RUN Paint with a mouse.

Adding a Reset Switch

When CMD came out with their SmartMouse, I was impressed with the adddition of a third button ('turbo' feature in GEOS) and a built-in clock. CMD has a reputation for improving on previous ideas and building quality products, but one thing that was missing was a reset button. My mice have both been modified with a reset switch. That's right, a reset switch! Everyone has probably installed one on their C-64 by now, and you'll be happy to know they also work wonders on a mouse.

Commodore wisely designed their 1351 mouse with a true proportional mode as well as a joystick mode. Proportional mode is the default with Joystick mode selected by holding the right button down when you power up. The 1351 manual describes this feature as allowing the mouse to be used as a joystick in the event the software doesn't support the proportional mouse mode. This is all fine and dandy if you remember to hold the right button down when you turn on your system, but isn't much help if you forget, usually resulting in shutting down and physically connecting a joystick or powering up while holding the button and then reloading the program. Not a very efficient way to do things.

"My mice have both been modified with a reset switch. Everyone has p robably installed one on their C64 by now, and you'll be happy to know they also work wonders on a mouse."

While I haven't seen the insides of the SmartMouse, or the popular M3 mouse, I believe it should be just as easy to install the switch in these units as in the 1351. The amount of space inside the case will determine the size of the switch needed, and the mounting location. On my 1351, the switch fits nicely on the left side of the cord on the front of the case. For left-handers, it may just as easily be installed on the right side. You will need a Normally Closed mini-switch (Radio Shack #275-1548), and a short length of wire. After you have taken your mouse apart and determined the best location for the switch, you will need to drill a hole for it. The plastic case is soft, and you should be able to use the bit in your hand or, if needed, turn it with a pair of pliers. The switches are installed on the seam of the case, and the nut is tightened after assembly.

To start your mouse, you need to patch into the Ground line or the +5V line. Due to differences in internal construction between my Japanese and Hong Kong models, and to make installation easier I imagine, one is wired into pin 8 (ground) and one is wired into pin 7 (+5V). Locate the wire to pin 8 (preferably), and remove it from the circuit board. Solder this wire to a pin on your switch and solder the length of the wire from the other pin back onto the circuit board. My circuit board was marked, but you may want to verify the wire with a multi-tester. The Japanese model has a plug-in connector attaching the wires to the circuit board. The wire to pin 8 (marked on the connector) was cut and a wire run from each end of this to each pin on the switch. After completing the installation of the wires, close up your case and tighten the nut on the switch.

My Japanese model had the installation almost 7 years ago; the other mouse came with a used system I got 3 years ago, and the switch was already installed. Neither has given me any trouble. To use your new reset switch to select joystick mode, all you have to do is hold the right button and click the reset button. You'll never have to shut down if you forget to power up in joystick mode again. Pressing the switch without holding the button will 'start' the mouse in proportional mode.

The switch is very beneficial with GEOS. Have you ever wanted to use a joystick in geoPaint? With a Change Input DA and the mouse reset button, you can easily swap drivers and modes on the fly. Another use came to light when I set up a system in my daughter's room. I don't have enough mice, so she has to use GEOS with a joystick (ugghhh). When she needs to print her work she brings it into the office and uses one of the 2 systems there. Since her boot disk is set for a joystick it is easier to change mouse modes with the button than select the mouse driver and have to change back to the joystick driver when she returns to her room.

As with all of the hardware modifications in this magazine, if you undertake this project you are on your own as far as responsibility goes. If you aren't comfortable with this type of project find a friend, or the hardware guru at your user group, who is willing to do the job for you. All in all, following these tips will let you get more enGEOyment out of your rodentiating!

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GEO PROGRAMMIST

MORE ON CREATING AND ALTERING DATA FILES

By Maurice Randall

In the last issue, I wrote something that wouldn't work to see if anyone would notice. The only way you would have noticed, is if you actually created a sample program using the ideas from the article. I explained how to create a data file from within an application and also showed how to add a comment to the header block of the data file. If you tried this, you would have noticed that the comment always disappears. Don't ask me why the designers of GEOS did it this way, but when you use SaveFile to create a file, it always puts a zero byte at the start of the comment area in the header block before saving the block to disk. This effectively wipes out the comment since it will now begin with a null terminator. GeoAssembler prevents us from having a comment in the header, as does the kernal routine, SaveFile. The only choice, beyond going without a header block, is using the following procedure to create one.

ADDING A COMMENT

After creating the new file, the header block will have to be loaded back into memory and the comment added. Then, the block can be saved back to the disk. The following routine will achieve this:

```
AddComment:
 LoadW r6,#dataName
 jsr FindFile
 txa
 bne 90$
 MoveB dirEntryBuf+19,r1L
 MoveB dirEntryBuf+20,r1H
 LoadW r4,#fileHeader
 jsr GetBlock
 txa
 bne 90$
 LoadW r0,#dataInfo
 LoadW r2,#(fileHeader+160)
 ldx #r0
 ldy #r2
 jsr CopyString
 jsr PutBlock
90$
 rts
dataName:
 .byte "SampleData",0,0,0,0,0,0,0
dataInfo:
 .byte "This is a sample from "
 .byte "Commodore World magazine.",0
```

The routine uses FindFile to load the directory entry into dirEntryBuf to get the track and sector pointer to the header block which then gets loaded into r1L and r1H. Remember, all sector reads and writes use r1L and r1H and the memory location in the computer always uses r4. Once the header is in memory, CopyString moves the comment. I avoided using r1 or r4 with CopyString to save reloading the registers for the next step; which is to write the header back to disk. A simple call to PutBlock is all that is needed.

CHANGING THE DATE

So far, we are working with a sequential type GEOS data file. If your application is capable of altering the data within the file, you might also want to consider having the ability to update the date and time stamp in the file's directory entry. Using standard GEOS kernal routines with VLIR type files automatically do this, but with sequential type files, it is done manually. Updating the date helps the user keep track of the most recent files when working.

When you first access the data file, most likely dirEntryBuf will remain unchanged in memory, so it won't be necessary to reload the directory entry. But if it has changed, then just use FindFile as in the previous example to reload the directory entry. Once the user has finished with the application or the particular data file, the following routine will update the date and time stamp:

```
UpdateTime:
 ldy #4
10$
 lda year,y
 sta dirEntryBuf+23,y
 dey
 bpl 10$
 rts
```

The time and date are recorded that GEOS has in memory as of the last pass through MainLoop. You may want to perform this step at the point in time when the data file is first opened, or just as the user is finished with it.

The directory entry can now be written back to disk, but be careful. You are writing to the directory. A mistake here could be costly. When FindFile was originally used to find the directory entry, some pointers were set. The directory entry was not only copied into dirEntryBuf, but also loaded into diskBlkBuf. This particular block's track and sector pointers are loaded into r1L and r1H respectively. There are eight directory entries in this block. We know where our own entry is because r5 will be pointing at it. So there are actually two copies of the directory entry in memory, one at dirEntryBuf and one somewhere within diskBlkBuf, indicated by r5.

If the entire directory block was kept in memory, our previous routine could write directly to the entry within the block and then write the block back to disk. Also, the 30 bytes at dirEntryBuf could be copied back into the block before writing it to disk. Either way, as long as r1L and r1H were saved somewhere and then restored, we would easily be able to write this directory block back to disk to the correct sector.

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MODIFYING THE DATA

While your application is running, it most likely has some means of modifying the data contained in the data file. If the entire data file can be loaded into memory, modification is simple. Once finished though, the old data must be deleted from the disk, and the new data written. It's not necessary to delete the whole file, but the data within the file must be changed. This can be a little tricky. As long as the amount of data in our file remains the same, the job will be much easier, since we can rewrite to the same sectors the old data occupies-bytes 1 and 2 of the directory entry point to the starting track and sector of the data. From the first block, we can build a list of sectors containing the data in the file:

```
MoveB dirEntryBuf+1,r1L
MoveB dirEntryBuf+2,r1H
LoadW r3,#fileTrScTab
jsr FollowChain
```

We will now have a list of sectors in memory of each block that contains the data in our file. The 256 byte area at fileTrScTab holds this list. To explain how this list is arranged, the first two bytes are the track and sector of the first block, the next two bytes would be for the second block, etc. Then the two bytes that come after the two representing the last block of the file would be a copy of the first two bytes in the last block. This would be a zero byte and a byte that would be somewhere between $01 and $ff depending on how many bytes are contained in the last block of the file. So, when you come to a zero byte where a track pointer should be, that means you have reached the last two bytes of the list.

Since fileTrScTab is only 256 bytes long, we can only have 127 track and sector pointers plus two final bytes, limiting us to a maximum of 32,258 bytes that could be used with our data file in this manner. In our case, this is not a problem because we don't have enough room in the computer to load a file this big. Remember, our example is a simple one. With this list of blocks we can now overwrite the old data with the new data:

```
LoadW r7,#dataArea
LoadW r6,#fileTrScTab
jsr WriteFile
```

Notice we didn't have to describe how much data to save? The list of blocks along with the final two bytes at fileTrScTab will inform WriteFile how much data to write to the disk. The data will be written to the exact blocks currently holding the old data.

WHEN THINGS DON'T MATCH

If our data file can be of a variable size, this method of overwriting the existing data won't work. Instead, we must actually delete the old data by freeing up those blocks and then allocating a new chain of blocks to hold the new data, since a different number of blocks will be needed. This method will definitely be needed if the data file was initially created without any valid data in it.

Begin by first building the track and sector list of the old data as in the previous example. Next, we must manually delete the data by freeing up each block in this list. An easier method would be to manually follow the chain of blocks and free each one as you go:

```
MoveB dirEntryBuf+1,r1L
MoveB dirEntryBuf+2,r1H
LoadW r4,#diskBlkBuf
jsr InitForIO
20$
jsr ReadLink
MoveW r1,r6
jsr FreeBlock
MoveB diskBlkBuf+1,r1H
MoveB diskBlkBuf+0,r1L
bne 20$
jsr DoneWithIO
```

Don't forget, we are altering the BAM on the disk, and after this routine is used, the BAM will only be altered after calling PutDirHead. If PutDirHead is not called, then the blocks won't actually be freed up, only the copy of the BAM in memory will have been altered. If GetDirHead was not already called prior to the routine, then that must also be done.

In the GEOS kernal, there is a routine that will free up a chain of blocks. The only bad thing is that nobody ever put an entry in the kernal jump table allowing access to the routine. Only the internal routines like DeleteFile can access the routine. We have to do it the hard way.

WRITING THE NEW DATA

Now that the old data is deleted, it's not too difficult to get the new data onto the disk. For our example, let's say that the new data is 1500 bytes long. We must allocate enough space on the disk for this amount of data. The kernal routine BlkAlloc can do this for us:

```
LoadW r6,#fileTrScTab
LoadW r2,#1500
jsr BlkAlloc
```

We can now use WriteFile to write the data to disk just like when we overwrote the old data. BlkAlloc has allocated these blocks in the BAM in memory, so a call to PutDirHead is required to update the BAM to disk.

VLIR

You've been limited on the amount of data you can have in your data file. Sometimes you need more, or maybe organized better.

We manually modified the data by overwriting the old data with the new in a sequential type file format. With a VLIR type file, a simple call to WriteRecord will handle the dirty work for us. It will take care of deleting the old data and replacing it with the new. ReadRecord can be used to read the data from the disk into memory. Each record can be up to 32,258 bytes in size, with up to 127 of these records in one file. DeleteRecord can be used to completely delete the data from any of our records. An initial call to OpenRecordFile opens the VLIR file and sets up some internal variables for the file. When you are finished with the file, a call to CloseRecordFile will close it. It will also update the date and time stamp for us if any change has been made to the file.

You may or may not have a need to handle more than one chunk of data, but if you do, GEOS has a pretty good method for doing so. Even if you don't go the VLIR route, at least now you have a good start on how to manage a sequential file format.

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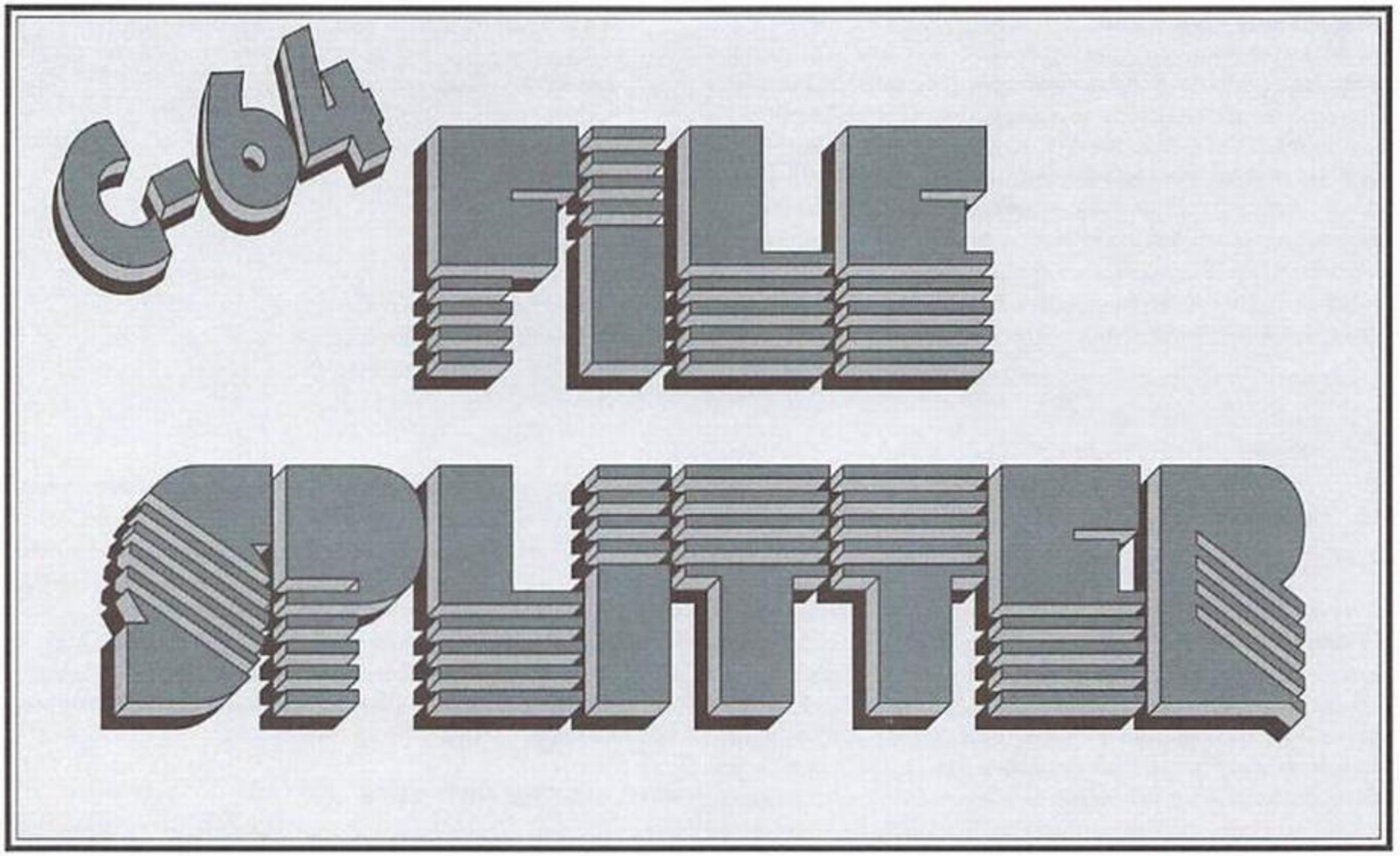

by Doug Cotton

Have you ever had a text file that was simply too big to handle? There are many files containing information available on the internet and from other sources that just won't fit into your favorite word processor. And even programs like ZED that deal with big files do have a limit.

The program presented here, FileSplitter, will ease those problems for you by splitting the file up into segments that you—and your software—can deal with. It's a quick and painless cure for those oversized file blues.

Building the Program

The listing presented here isn't the FILESPLITTER program itself, but rather a utility that uses data from the data statements to create the program on a disk for you. Be sure to use our CHECKSUM program to check the lines as you enter them.

After you have entered and saved (for safety!) the FSPLIT.CREATE utility, RUN it. If you have entered the listing correctly, it will inform you that it is ready to create FILESPLITTER , and will ask you which device you want it to use for this purpose. Enter the appropriate device number, first making sure that you have a disk with at least 13 blocks free installed in the disk drive. The creation process could take a few minutes, depending on the speed of the device you're using.

Using FILESPLITTER

Once you have created the program, you may LOAD and RUN it. The menu will appear, and will immediately prompt you to input the source device number. You may enter any legal device number, and the program works with most any Commodore device—including CMD devices.

Next, enter the path to the file you want the program to split, which the program refers to as the source path. If the file is on a 1541, 1571 or 1581 disk drive, the default path of 0: will work just fine. However, if the file is on a CMD device, then the source path can be used to specify the partition and/or subdirectory where the file is located. For example, if the source file is located in a subdirectory called BIGFILES in partition number 7, you would enter 7//BIGFILES/: as the source path. The path input line allows up to 200 characters for longer paths.

Now enter the actual filename. This can be up to 16 characters, but be aware that only the first 12 characters will be seen in the files created by FileSplitter—the last four characters positions are used to indicate the segment number of each file.

The next field to enter is the target device number. This can be either the same as the source device number, or any other device you have available. Please note that if you use the same device as the source and the target that the segment files will be written to the same disk that the source file resides on—there's no prompt for disk swapping.

The target path is specified next. This input line works just like the one used for the source path, but is used to indicate where the segment files should be written. Use the default 0: if you aren't using a CMD device.

The final prompt is for the segment size, the size of each individual file created by the splitter. You can specify any value from 1 to 999 blocks.

After you've entered the block size, the program will automatically go to work creating the segments. When completed, you'll have the option of exiting from the program, or specifying another file to split.

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FSPLIT.CREATE

```
75    10 print"{CLEAR/HOME}";
218   20 print"ready to build filesplitter"
234   30 print"save on which device";:inputdv
153   40 if dv<8 or dv>29 then goto 10
233   50 open8,dv,8,"filesplitter,p,w"
21    60 read a$:print".";:if a$="end" then cl
      ose8:goto120
137   70 fori=1tolen(a$)step2
133   80 h=asc(mid$(a$,i,1))-48:ifh>9thenh=h-7
      :c=c+h
160   90 l=asc(mid$(a$,i+1,1))-48:ifl>9thenl=l
      -7:c=c+l
81    100 v=l+h*16:print#8,chr$(v);
195   110 next:goto60
25    120 ifc<>21543thenprint"error in data!"
3     130 end
198   140 :
164   1000 data 01080d0810009e2832303633290000
51    1010 data 004c5a08002c532c57000000000000
46    1020 data 00000000000000000000000000000000
56    1030 data 00000000000000000000000000000000
31    1040 data 00000000000000303a0032000000000
12    1050 data 00000000000000000000000000000000
82    1060 data 008d7ed08d76d08d7fd0a5ba8d3808
235   1070 data 8d3d0820a213a203bd9d139d39089d
232   1080 data 3e08ca10f4ad45082Øa213a203bd9d
28    1090 data 139d4708ca10f7a9008d20d08d21d0
9     1100 data a2009df5139df5149df515e8d0f4a2
145   1110 data 00bd4208f0099df5139df514e8d0f2
178   1120 data a99320d2ffa90e20d2ff202e0a2008
159   1130 data 0c20d50b207d0c20d50b20ca0c20d5
137   1140 data 0b20140d20d50b20890d20d50b20d6
46    1150 data 0d20d50ba9008d4d088d2b088d2d08
142   1160 data 20b3092050Øe2c2d08100034c4709a9
39    1170 data 008d1208ee1208ad1208820a2132Ød8
241   1180 data 092081Øe2c2d0830Ø820e7102c2d08
56    1190 data 1Ø034c4409a9008d4c088d4b0820fc
109   1200 data 0e2c2d08100034c44092027Øf2c2d08
118   1210 data 1Ø034c4409ad4d08f00920e10e20c6
82    1220 data 0e4c7109ee4b08ad4b08d003ee4c08
21    1230 data ad4b08cd4508d0c9ad4c08cd4608d0
71    1240 data c120ccff20e10e4c02092Ød50b18a2
23    1250 data 0da0022Øf0ff206e13055155495420
5     1260 data 50524f4752414d3f2028592f4e2900
74    1270 data 20e4fff0fbc959f007c94ed0f34cbd
129   1280 data 08a99320d2ff8d7ed08d77d08d7fd0
111   1293 data 602023Øaa000a200bdf513f00799f5
102   1300 data 15e8c8d0f4a200bd1808f00799f515
213   1310 data e8c8d0f48c2908602023Øaa000a200
124   1320 data bdf514f00799f515e8c8d0f4a200bd
22    1330 data 1808f00b99f515e00cf004e8c8d0f0
236   1340 data a92e99f515c8a200bd9d13f00799f5
150   1350 data 15e8c8d0f4a200bd1308f00799f515
189   1360 data e8c8d0f48c2a0860a900a2009df515
8     1370 data e8d0fa60206e139305202020202020
112   1380 data 2020202020202020246494c4553504c
```

FSPLIT.CREATE *(cont.)*

```
1     1390 data 49545445520d9e2020202843292031
112   1400 data 393936204259204352454154495645
236   1410 data 204d4943524f2044455349474e530d
83    1420 data 0d00206e131e20c0c0c0c0c0c0c0c0
205   1430 data c0c0c0c0c0c0c0c0c0c0c0c0c0c0c0
97    1440 data c0c0c0c0c0c0c02053 4f5552434520c0
244   1450 data 0d00206e139f2020444556494345 20
207   1460 data 3a200500ad38082097132Ø6e130d9f
115   1470 data 2020504154482020203a200500a200
247   1480 data bdf513f00820d2ffe8e01bd0f3206e
93    1490 data 130d9f202046494c452020203a200d
191   1500 data 00206e131e20c0c0c0c0c0c0c0c0c0c0
124   1510 data c0c0c0c0c0c0c0c0c0c0c0c0c0c0c0c0
72    1520 data c0c0c0c0c020544152474554 20c00d
115   1530 data 00206e139f2020444556494345203a
52    1540 data 200500ad3d08209713206e130d9f20
41    1550 data 2050415448202020 3a200500a200bd
165   1560 data f514f00820d2ffe8e01bd0f3206e13
53    1570 data 0d9f202053495a452020203a200500
20    1580 data ad4508209713206e1320424c4f434b
214   1590 data 5300206e130d1e20c0c0c0c0c0c0c0c0
22    1600 data c0c0c0c0c0c0c0c0c0c0c0c0c0c0c0c0
207   1610 data c0c0c0c0c0c0c0c020535441544555320
166   1620 data c00d0d0d00206e130d1e20c0c0c0c0c0
244   1630 data c0c0c0c0c0c0c0c0c0c0c0c0c0c0c0c0
254   1640 data c0c0c0c0c0c0c0c0c0c0c0c0c0c0c0c0
244   1650 data c0c0c0c00d006018a20da00220f0ff
50    1660 data 206e13052020202020202020202020
220   1670 data 2020202020202020202020202020202020
175   1680 data 2020202020202020202020006018a2
109   1690 data 0da00220f0ff206e1305454e544552
204   1700 data 20534f5552434520444556494345 00
123   1710 data a9018d8602a9048d5108a239a00886
42    1720 data fa84fba90b8d5208a9008d50088d4e
213   1730 data 088d4f08a9028d5308a9038d540820
135   1740 data ef1120bf11a200bd3908f0c7e8bd39
156   1750 data 08d0faa004bd3808992e0888cad0f6
145   1760 data 205e11ad34088d38086018a20da002
74    1770 data 20f0ff206e1305454e54455220534f
119   1780 data 5552434520504154480 0a9018d8602
242   1790 data a9058d5108a2f5a01386fa84fba90b
54    1800 data 8d5208a9008d5008d4e088d4f08a9
174   1810 data eb8d5308a91b8d54084cef1118a20d
64    1820 data a00220f0ff206e1305454e5445522 0
238   1830 data 46494c454e414d4500a9018d8602a9
57    1840 data 068d5108a218a00886fa84fba90b8d
2     1850 data 5208a9008d5008d4e088d4f08a910
136   1860 data 8d5308a9118d54084cef1118a20da0
145   1870 data 0220f0ff206e1305454e5445522054
81    1880 data 4152474554204445564943450 0a901
8     1890 data 8d8602a9088d5108a23ea00886fa84
157   1900 data fba90b8d5208a9008d50088d4e088d
158   1910 data 4f08a9028d5308a9038d540820ef11
254   1920 data 20bf11a200bd3e08f0c7e8bd3e08d0
155   1930 data faa004bd3d08992e0888cad0f6205e
181   1940 data 11ad34088d3d086018a20da00220f0
```


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FSPLIT.CREATE *(cont.)*

```
170  1950 data ff206e1305454e54455220544152 47
195  1960 data 45542050415448 00a9018d8602a909
159  1970 data 8d5108a2f5a01486fa84fba90b8d52
198  1980 data 08a900 8d50088d4e088d4f08a9eb8d
57   1990 data 5308a91b8d54084cef1118a20da002
126  2000 data 20f0ff206e1305454e544552205345
34   2010 data 474d454e542053495a4500a9018d86
104  2020 data 02a90a8d5108a247a00886fa84fba9
111  2030 data 0b8d5208a9008d50088d4e088d4f08
127  2040 data a9038d5308a9048d54 0820ef1120bf
167  2050 data 11a200bd4708f0c7e8bd4708d0faa0
82   2060 data 04bd4608992e0888cad0f6205e11ad
101  2070 data 34088d4508ad35088d46086020d50b
223  2080 data 18a20da00220f0ff206e1305 4f5045
252  2090 data 4e494e4720524541442046494c4500
147  2100 data a901ae3808a00220baffad29084cb4
205  2110 data 0e20d50b18a20da00220f0ff206e13
166  2120 data 0557524954494e4720534547 4d454e
93   2130 data 542000ad1208209713a902ae3d08a0
49   2140 data 0320baffad2a08a2f5a01520bdff20
145  2150 data c0ff9003 4c690f4ce71020ccffa901
16   2160 data 20c3ff900082c2d08300b20690f2c2d
112  2170 data 08300 34ce710602 0ccffa90220c3ff
210  2180 data 900082c2d08300320690f2c2d083003
201  2190 data 4ce71060a20120c6fff0034c690fa0
23   2200 data 0220cfff99f516a590f00ec940f003
195  2210 data 4cb8108c2b088d4d0860c8d0e520cc
16   2220 data ff60a20220c9fff0034c690fad4d08
198  2230 data c940f016a002b9f51620d2ffa590f0
45   2240 data 034cb810c8d0f020ccff60a002b9f5
142  2250 data 1620d2ffa590f0034cb810cc2b08f0
138  2260 data 03c8d0eb20ccff6048a9808d2d0820
17   2270 data ccff20d50b18a20da00220f0ff206e
212  2280 data 1305455252 4f523a2000 68c9019004
15   2290 data c90a9002a90a0aaacacabdb40f8da7
207  2300 data 0fbdb50f8da80fa200bdfffff00620
238  2310 data d2ffe8d0f54c6410c80fd70fe10fef
15   2320 data 0ffe0f1110201030104110571054 4f
106  2330 data 4f204d414e592046494c4553004649
181  2340 data 4c4520 4f50454e0046494c45204e4f
95   2350 data 54204f50454e0046494c45204e4f54
49   2360 data 20464f554e4400444556494345204e
159  2370 data 4f5420505245534 54e54004e4f5420
46   2380 data 494e505554204 6494c45004e4f5420
215  2390 data 4f555450555420 46494c45004d4953
160  2400 data 53494e472046494c454e414d450049
247  2410 data 4c4c4547414c2044455649434 5204e
59   2420 data 554d4245520055 4e4b4e4f574e2054
118  2430 data 595045002 06e130d0520205052455 3
162  2440 data 5320414e59204b45592e2e2e0020e4
71   2450 data fff0fb20d50ba90d20d2ff20dd0b60
189  2460 data 20d50b18a20da00220f0ff206e1305
70   2470 data 4552524f523a2000a200bdf517f00a
128  2480 data c90df00620d2ffe8d0f14c6410a980
56   2490 data 8d2d0820ccff20d50b18a20da00220
90   2500 data f0ff206e13055354415455320455 2
```

FSPLIT.CREATE *(cont.)*

```
18   2510 data 524f523a2000a590209713604c6410
235  2520 data a900 8590a5ba20b4ff249010 0 34cb8
85   2530 data 10a96f2096ff249010034cb810a200
16   2540 data 20a5ffa590d008a5a49df517e8d0f1
172  2550 data c940f0098d2c0820abff4cb810a5a4
237  3328 data 9df517a900e89df517adf51729 0f8d
243  3341 data 2b080a0a6d2b080a8d2b08adf61729
41   3348 data 0f0d2b088d2b08ad2b08f005a9808d
155  3358 data 2d0820abffad2d08f0034c8d1060a9
42   3368 data 00a2019d3408ca10faaabd2e0838e9
173  3378 data 309014482086116 8186d34088d3408
66   3388 data 9003ee3508e8d0e460209611209d11
205  3398 data 2093112 0a91160209611 0e34082e35
183  3408 data 0860a001b9340899360888 10f760a0
166  3418 data 00180828b9360879340899340808c8
108  3428 data c002d0f02860a930a2059d2d08cad0
216  3438 data fa6048a9008d0ddd8d0edd8d0fdda9
201  3448 data ff8d04dda9048d05dda9118d0eddad
118  3458 data 05ddd0fb88d0f3686020dd122 01513
137  3468 data a21e20e4ffd013a00a20ca11cad0f3
139  3478 data ad5508f0e62017134cf51148201713
233  3488 data 68a205dd4d12f01dca10f8ac4e08cc
172  3498 data 5308b0c948b1fad004c891fa886891
238  3508 data fa2073124cef118a0aaabd53128d48
7    3518 data 12bd54128d49122047124cef110d14
55   3528 data 941d9d225f128512b9126c129e1284
54   3538 data 12a9008d4f088d4e0868684cdd12ac
187  3548 data 4e08b1faf011c88c4e089838ed4f08
60   3558 data cd5408900 3ee4f0860ac4e08cc5008
149  3568 data d005b1faf0f3c8b1fa8891faaaf004
131  3578 data c8c8d0f4ac4e08cc5008d006ad4f08
58   2820 data d00a60888c4e08cc4f08b003ce4f08
55   2830 data 60a000b1faf003c8d0f9cc5308b015
45   2840 data b1fac891fa8888c0fff005cc4e08b0
170  2850 data f0c8a92091fa60ae5108ac52081820
115  2860 data f0ffa90120d2ff200813a200ac4f08
56   2870 data b1faf002c82ca92020d2ffe8ec5408
32   2880 data 90efa9002ca9012c56083003 85d460
32   2890 data 85f46038241808ad4e0838ed4f0818
99   2900 data 6d5208a8ae5108 1820f0ffa90120d2
239  2910 data ff289006a9122 0d2ff2ca9008d5508
96   2920 data 200813ac4e08b1fad002a92020d2ff
206  2930 data 200513a9924cd2ffa0ffc8b1fad0fb
133  2940 data 88c0fff00bb1fa38e920d00491faf0
140  2950 data f060488a489848a000bafe0401d003
175  2960 data fe0501bd040185cebd050185cfb1ce
187  2970 data f00520d2ff90e468a868aa686020a2
99   2980 data 1320 6e1320202000 6048a9008d5708
177  2990 data 8d580868c9649007e964ee5708d0f5
122  3000 data c90a9007e90aee5808d0f58d5908a9
116  3010 data 208d9e138d9f139848a000ad5708f0
223  3020 data 0320ee13ad5808d004c000f00320ee
192  3030 data 13ad590820ee1368a86009 30999d13
86   3040 data c860
200  3050 data "end"
```


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ASSEMBLY LINE

816 BEAT: IMPROVE SUPERCPU EFFICIENCY THE NATIVE WAY

By Doug Cotton

If you're a regular reader of this column, you're probably aware that it's normally written by Jim Butterfield. However, I've given Jim a bit of a breather this month, and in doing so have been able to tie the column in with our SuperCPU theme. But even if you don't have a SuperCPU, there's plenty of code in this article to go around—so no need to run off.

Much has already been said about the SuperCPU's ability to speed up programs due to it's higher clock speed, and even through its optimization modes; but there's yet another means available for making programs operate faster on this new hardware: using the 65816's 16-bit native mode. And it's actually quite easy to take advantage of this.

Getting in and out of 16-bit Mode

Before we can begin any intelligent discussion of what you can do in the 65816's 16-bit mode, it would help to know how that mode is entered. There are also some tricks to be learned about using new instructions if you're presently using an assembler that doesn't have 65816 support.

In the previous issue of Commodore World (#16), we included a *65816 Native Mode Programming Model* in the article, "A 6502 Programmer's Introduction to the 65816." We've included the model with this article as well, for those of you who don't have Issue 16. Within that model you'll note a box labelled, "Native Mode Options." The box contains some tips about the native mode, and also includes a chart showing how to control 8- and 16-bit operation within native mode. Text near the Processor Status Register diagram shows that the emulation flag of this register controls switching between native and emulation modes. Since the emulation flag is in a 'hidden' register bit, a new instruction—XCE, or eXchange Carry with Emulation—has been created to enact the change. Thus, to switch from the SuperCPU's normal operating mode (which is emulation mode) to the native mode requires the following (parenthesis contain cycle counts):

```
gonatv    clc          (2)
          xce          (2)
```

If you don't have a 65816 assembler, you can do this instead:

```
gonatv    clc          (2)
          .byte $fb    (2)
```

Since $fb is the value generated by an assembler for the XCE opcode, we've just gone ahead and figured this out ahead of time for the assembler. We've now reached native mode, but the m and x bits of the Processor register are both initially set to 1, which means we're still in 8-bit operating mode. A quick glance at our chart shows that we'll need to set both of these to zeroes to get into full 16-bit operation. Again, we have a new instruction to deal with: REP, or REset Processor status bits. Here's the code:

```
go16      rep #$30     (3)
```

Again, we'll have to fool the assembler if it isn't 65816-savvy:

```
go16      .byte $c2,$30 (3)
```

And now we're fully 16-bit native. To reverse the process, we only need to re-enter emulation mode, as the registers will automatically be set to 8-bit in that mode. Thus:

```
goem      sec          (2)
          xce          (2)
```

Once again, for the 6502-only assemblers:

```
goem      sec          (2)
          .byte $fb    (2)
```

You now have all the code you'll need to get in and out of the 65816's16-bit native mode, but there's one final thing you need to keep in mind as you look over the routines supplied here. Entering and exiting from 16-bit native mode does cost a few cycles, as well as a few bytes of code. In many cases, this won't matter much; after all, 16-bit code may often save you a few hundred cycles. But if the difference in cycles is close, there may be little advantage to native mode. It's up to you to determine whether native mode is worthwhile as you create your programs.

16-Bit Loops

Loops are commonly used in nearly every program written. More often than not, loops will contain various calls to subroutines within them, but for our purposes here, we'll just look at the loops themselves.

While we're on the subject, loops should never be used as a means of timing an event; with the availability of accelerators such loops become a source of problems for the end user. For timing of events, always use a fixed timing source, such as a timer or an interrupt.

That aside, the following is a common loop in 6502, or 8-bit 65816:

```
loop16    lda #0            (2)
          sta lobyte        (4)
          sta hibyte        (4)

-         inc lobyte        (6)
          bne -             (3 if taken, 2 if not)
          inc hibyte        (6)
          bne -             (3 if taken, 2 if not)
```


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Now, let's take a look at doing the same loop in 65816 16-bit Native Mode:

```
loop16    stz byte      (5)
-         inc byte      (8)
          bne -         (3 if taken, 2 if not)
```

Assuming that none of the variables are located in "zero page" and that branches don't cross any page boundries, the 6502 routine would take 591,881 cycles to execute. In contrast, the 65816 routine would take 720,900 cycles, making it about 22% slower than the 8-bit version. So in this case, 8-bit code is faster, though it takes 17 bytes of code versus the 8 bytes used in 65816 code.

This example teaches us an important lesson: *16-bit code isn't always faster, but will often save space.*

But wait... the 65816 has 16-bit registers which we can take advantage of to speed up the routine. Let's look at the revised source for that method:

```
loop16    ldx #0        (2)
-         inx           (2)
          bne -         (3 if taken, 2 if not)
```

This method takes only 327,681 cycles... quite a savings over the original 6502 code. In all fairness, though, we could rewrite the 6502 code to use registers as well. While this will use both of our indexing registers, it does make for a more fair comparison. Let's see how that looks:

```
loop16    ldx #0        (2)
          ldy #0        (2)
-         inx           (2)
          bne -         (3 if taken, 2 if not)
          iny           (2)
          bne -         (3 if taken, 2 if not)
```

This version comes closer to matching the speed of the 16-bit code, but still lags behind by a small percentage, takes more code, and eats up resources by using both index registers.

These examples bring to mind another important lesson: *While a direct translation of an 8-bit routine to 16-bit may not always be faster, there may be a better way to do it in 16-bit. Adjust your thought process!*

16-Bit Addition

Addition of two 16-bit values is a relatively simple process. The 8-bit code for doing this often looks something like this:

```
add16     clc           (2)
          lda lobyte1   (4)
          adc lobyte2   (4)
          sta loresult  (4)
          lda hibyte1   (4)
          adc hibyte2   (4)
          sta hiresult  (4)
```

Now let's take a look at the 16-bit alternative:

```
add16     clc           (2)
          lda byte1     (5)
          adc byte2     (5)
          sta result    (5)
```

This gives us 17 cycles instead of 26, and a routine that is 10 bytes long instead of 19. A definite improvement.

16-Bit Subtraction

Subtraction of two 16-bit values is very similar to the addition routine. Here's the 8-bit code:

```
sub16     sec           (2)
          lda lobyte1   (4)
          sbc lobyte2   (4)
          sta loresult  (4)
          lda hibyte1   (4)
          sbc hibyte2   (4)
          sta hiresult  (4)
```

And the 16-bit version looks like this:

```
sub16     sec           (2)
          lda byte1     (5)
          sbc byte2     (5)
          sta result    (5)
```

As you can see, the subtraction routines take exactly the same number of bytes and cycles as the addition routines did. That is, it takes 17 cycles and 10 bytes for the 16-bit subtraction, versus the 26 cycles and 19 bytes required by the 8-bit routines. It's worth noting at this point that if you have to enter and exit native mode to perform only one of these functions—adding 6 bytes and 11 cycles—you'll still save 3 bytes, but add 2 cycles. Try to minimize mode switching by doing as much as you can in native code.

16-Bit Multiplication

The following 8-bit routine multiplies two 16-bit values (val1 and val2), and returns with the result in the .X (high byte) and .Y (low byte) registers.

```
mul16     ldx #0        (2)
          ldy #0        (2)

-         lda val1      (4)
          ora val1+1    (4)
          beq emul16    (3 if taken, 2 if not)

          lsr val1+1    (6)
          ror val1      (6)
          bcc +         (3 if taken, 2 if not)

          clc           (2)
          tya           (2)
          adc val2      (4)
          tay           (2)
          txa           (2)
          adc val2+1    (4)
          tax           (2)

+         asl val2      (6)
          rol val2+1    (6)
          jmp -         (3)

emul16    rts           (6)
```


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This 16-bit routine performs the same function, but the result is returned directly in the 16-bit Accumulator (.A or .C).

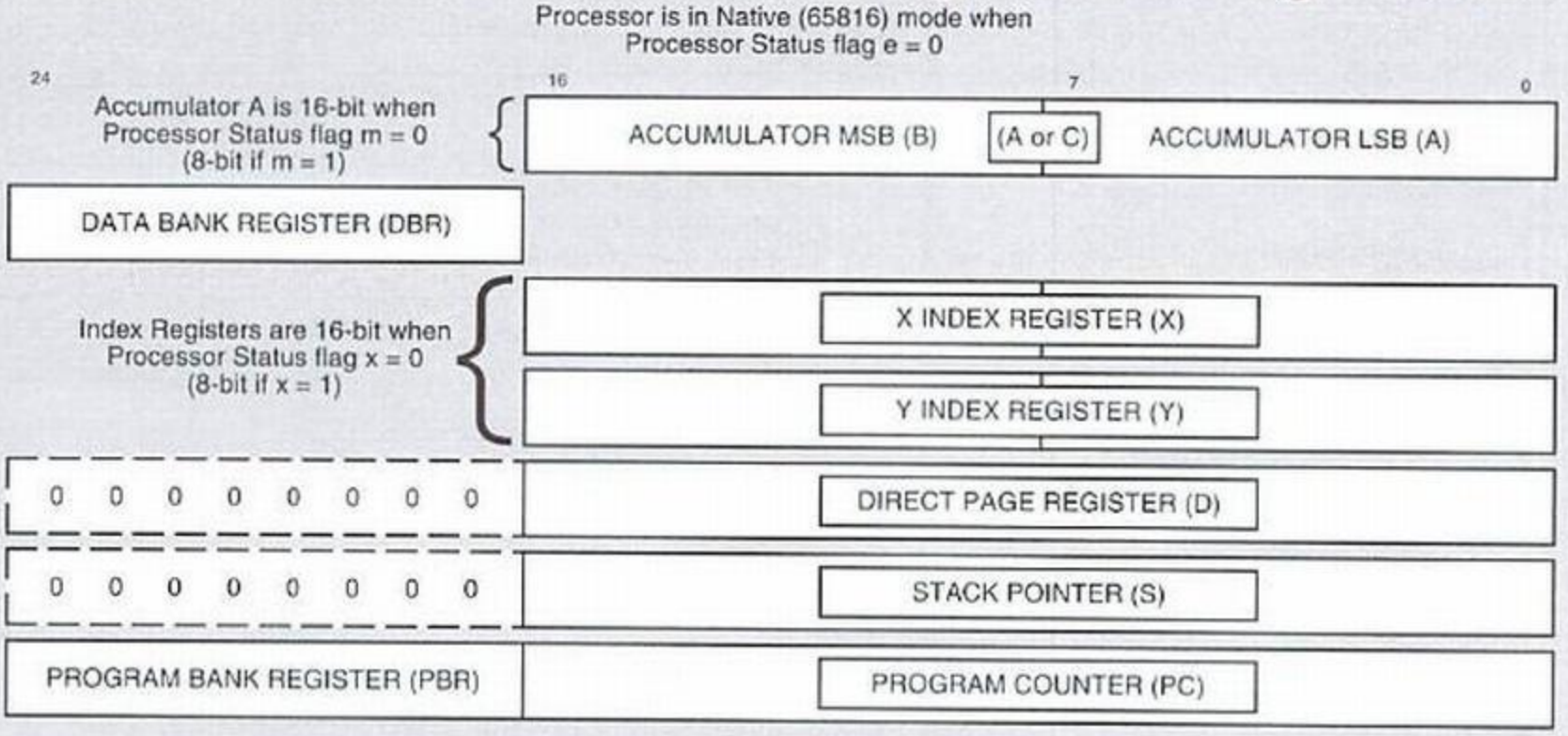
```
mul16   lda #0          (3)

-       ldx val1        (5)
        beq emul16      (3 if taken, 2 if not)

        lsr val1        (8)
        bcc +           (3 if taken, 2 if not)

        clc             (2)
        adc val2        (5)

+       asl val2        (8)
        bra -           (3)

emul16  rts             (6)
```

The 16-bit version saves approximately 30% in execution time, and uses only a little over half as many bytes of code to do it. This is an obvious win-win situation.

As you've seen by the examples thus far, 16-bit mode operation can not only save you cycles (time!), but can also save you typing and code space. And we've only begun to scratch the surface here. There's a lot more opportunity to derive new and fast routines that simply were not possible using the 6502—and we can adapt quickly because the 65816 gives us an enhanced 6502 instruction set instead of replacing it with something completely new.

In order to continue to look at the new possibilities, and also to let Jim have his column back, we'll be moving into our own column, *816 Beat*, beginning with the very next issue of Commodore World. We'll begin that column by taking a look at something which I ran out of space for in this issue: 16-bit division. We'll also look at using a 6526 CIA timer to set reliable time delays for our programs. And in the months to come, we'll be your source and guide to SuperCPU and 65816 issues and programming.

65816 Native Mode Programming Model

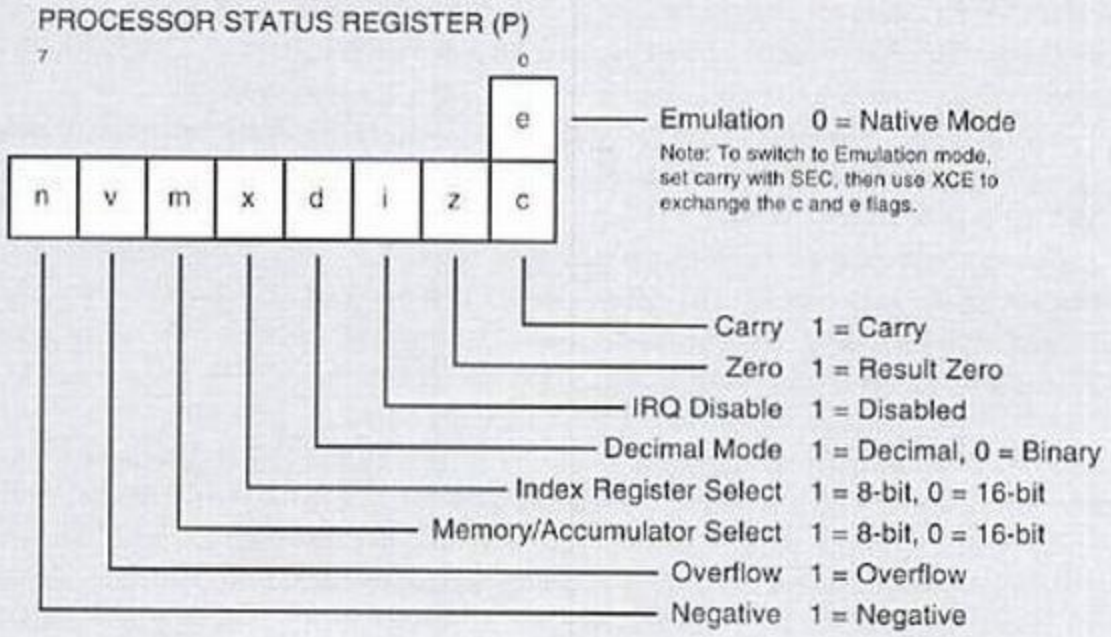

Processor is in Native (65816) mode when
Processor Status flag e = 0
24
16
7
0
Accumulator A is 16-bit when
Processor Status flag m = 0
(8-bit if m = 1)
ACCUMULATOR MSB (B)
(A or C)
ACCUMULATOR LSB (A)
DATA BANK REGISTER (DBR)
Index Registers are 16-bit when
Processor Status flag x = 0
(8-bit if x = 1)
X INDEX REGISTER (X)
Y INDEX REGISTER (Y)
0 0 0 0 0 0 0 0
DIRECT PAGE REGISTER (D)
0 0 0 0 0 0 0 0
STACK POINTER (S)
PROGRAM BANK REGISTER (PBR)
PROGRAM COUNTER (PC)

Native Mode Options

While in Native Mode, the m flag controls the size of Accumulator A and most Memory operations, while the x flag controls the size of the X and Y Index Registers. This provides 4 different configuration possibilities, as charted below. The REP and SEP instructions are used in combination to switch configurations.

m	x	A/M	X/Y	Instructions
0	0	16-bit	16-bit	REP #$30
0	1	16-bit	8-bit	REP #$20 SEP #$10
1	0	8-bit	16-bit	REP #$10 SEP #$20
1	1	8-bit	8-bit	SEP #$30

It is important to note that the m flag will control the size of all operations dealing with memory except in operations involving the X and Y Index Registers (CPX, CPY, LDX, LDY, STX and STY) where the x flag controls the size.


PROCESSOR STATUS REGISTER (P)
7
0
n v m x d i z c
e
Emulation 0 = Native Mode
Note: To switch to Emulation mode, set carry with SEC, then use XCE to exchange the c and e flags.
Carry 1 = Carry
Zero 1 = Result Zero
IRQ Disable 1 = Disabled
Decimal Mode 1 = Decimal, 0 = Binary
Index Register Select 1 = 8-bit, 0 = 16-bit
Memory/Accumulator Select 1 = 8-bit, 0 = 16-bit
Overflow 1 = Overflow
Negative 1 = Negative

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BASIC INSTINCTS

FINDING YOUR WAY INTO THE NEXT MILLENIUM

By David Pankhurst

Time is the most constant thing in our lives. Change jobs, lifestyles, cities, but time goes on. Even our measurements change; perhaps you've heard of the metric system? Yet, even though we've spent all of our lives dealing with time, it remains one of the most confusing measurements. If you don't agree, ask yourself—how many days have you been alive? How many seconds are there in an hour or day? This month, we look at time, and see how the C64 helps us come to grips with it.

Today's Star Date

There are estimated to be about a dozen different calendars in use worldwide. It is likely you're familiar with western civilizations' Gregorian calendar. However, those of the Islamic and Jewish faiths have radically different calendars. And if you've ever heard of Ukrainian Christmas, you'll know that another calendar is involved. In all cases, the variation boils down to two specific items-when to start the zero year, and how long each year will be. A true year is not 365 days, but about 365.242193287 days (called a solar year). To Ancient Man, it made sense to go from day to day, leaving out the fraction of a year. In time this fraction of a day grew and grew, until the calendar was out of sync with the seasons. To prevent this, the year was modified, usually by adding a day here and there.

In our calendar, a day is added every four years on a day known as Leap Year (February 29), but that's only part of the solution. By adding this day, we add twenty–five days every century, in addition to the regular 365 days for each year. When combined, these numbers total 36,525 days per century. The problem is, one hundred *solar* years equals 36,524.2193287 days, meaning an error of about three-quarters of a day accumulates each century, and needs to be accounted for.

The solution to correct this was announced by Pope Gregory XIII in 1582. At the end of the 16th century, this 3/4 of a day per century had caused the calendar (called the Julian) almost two weeks out of sync with the seasons. He adjusted the calendar to make up the accumulated difference, and then modified the calendar. This form (today's Gregorian calendar) makes an additional adjustment besides the leap year, involving the first year of each century. These years had been leap years, and so he made them 'leap-less'. Subsequently, each century was one day shorter, and the discrepancy was only about one quarter of a day. Since these quarter-days accumulated too, he decreed that every four hundred years, the first year of the century would again become a leap year.

We now have a calendar that will stay synchronized with the earth's orbit around the sun for about 3,000 years, without adjustment. And what this reform especially means to us now is that the year 2000 will have a leap year, unlike the year 1900. This is a unique event, since there there will not be another century beginning with a leap year until the year 2400.

The Millennium Beckons

As the year 2000 approaches, expect a lot of hysteria. I'm not talking about doom-sayers, but computer programmers and managers. Perhaps you've already heard about the Year 2000 crisis. Most of the problems are from poor planning by programmers. By not taking into account the full four digits of a year, they planted a time bomb that should go off January 1st, 2000.

The problem stems from the early days of computing. Memory space was at a premium, and every byte counted (a feeling familiar to C64 users). Programmers working on these systems needed to take every possible shortcut to conserve the precious memory. A fairly basic way of saving space was to use only two digits for the year, rather than four. This cut the memory size in half, and everyone was happy. COBOL, a computer language developed in the 50s, stored numbers as text characters, and this was a common way to save memory in that language.

On Jan 1, 2000, we have a problem. To the computer, 01/01/00 is smaller than 12/31/99, yet the date it represents is bigger (or, later in time). All kinds of bugs are expected in software dependent on dates. Already, people are testing their systems by setting the clock after 1999. In one case, a company found that their software would constantly reorder stock, since all the current stock was considered spoiled, having arrived (to the computer's reckoning) a century ago! Accounting records using that data were likewise corrupted.

How does this affect the average C64 user? Mercifully, Commodore users have little to worry about. Since we have no built-in clock, programs rarely use dates for processing, and so there shouldn't be any problems. If you have another brand of computer, however, you might want to try a test: set the clock to 11:59 p.m., December 31st, 1999, and let it roll over. Create a file, and check the date on it. Run a few programs, and check the result. And if you have a C64 with a clock, try the same thing there, to see if the clock hardware cycles over correctly.

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BI.17.1.BAS

```
240  100 rem convert days from 1900 to dd/mm/
     yyyy format
52   110 yr=int(d/365.25)+1900
21   115 d=d-int((yr-1900)*365.25):if(yr/4<>i
     nt(yr/4))thend=d-1
48   120 mn=12
106  130 m$="000031059090120151181212243273304334"
201  135 if(int(yr/4)=yr/4)then m$="000031060
     091121152182213244274305335"
92   140 if(d<val(mid$(m$,(mn-1)*3+1,3)))then
      mn=mn-1:goto 140
83   150 dy=d-val(mid$(m$,(mn-1)*3+1,3))+1
47   160 return

6    200 rem convert dd/mm/yyyy to days from
     1900
152  210 if(yr>2099 or yr<1901)then print "on
     ly years from 1901-2099":end
99   220 d=(yr-1900)*365+int((yr-1901)/4)+dy
219  230 if((yr/4=int(yr/4))and(mn>2))then d=
     d+1
155  240 m$="000031059090120151181212243273304334"
135  250 d=d+val(mid$(m$,(mn-1)*3+1,3))
147  260 return

158  300 rem test if dd/mm/yyyy is valid
135  310 ty=dy:tn=mn:tr=yr
130  320 gosub 200
138  330 gosub 100
51   340 if(dy<>ty or mn<>tn or yr<>tr) then
     print "***invalid****"
237  350 return

44   500 rem test conversions
65   510 input "day,month,year";dy,mn,yr
211  519 ty=dy:tn=mn:tr=yr:print dy;mn;yr;tab
     (17);
35   520 gosub 200:rem convert to number
156  522 print d;tab(25);
142  530 gosub 100:rem convert back to date f
     ormat
223  540 print dy;mn;yr
201  550 if(dy<>ty or mn<>tn or yr<>tr) then
     print "***invalid date****
144  590 goto510
```

Eliminate Dating Woes

One way to evaluate time is as a count of days from a specific event, such as the beginning of a century. In that case, the Millennium is just another day, one more than the day before. As well, comparisons work easily, since each day is just a single number. The routines in the listing BI.17.1.BAS will handle this type of conversion. The program at line 500 lets you test the conversions—enter all the lines, and RUN 500.

The first section of code (lines 100-160) takes a date in variables DY (day), MN (month), and YR (year), and converts these to a single number, returned in variable D. This number represents the number of days elapsed since January 1st, 1900. For example, January 1st, 1901 would return 366.

The second routine (lines 200–260) reverses the process. Given a number in D, it returns the day (DY), month (MN), and year (YR) corresponding to that number. Entering D=366 would return DY=1, MN=1, and YR=1901.

Using these two routines, you can easily manipulate dates. You can use the routines for a number of tasks. To find the difference in days between dates (such as how old you are), convert both dates to numbers, then subtract them. Use the routines to calculate a date X days in the future, convert today's date to a number, add X to it, then convert back to a date. The routines can also bge used to compare dates easily by converting them to numbers, the larger number is the later date, which you can compare with a single IF instruction.

A third routine (lines 300-350) is provided for checking dates. Since the routines can convert valid or invalid dates to numbers, this code first converts the date to a number, and then the number back to a date. If the resulting date (which is valid) is the same as the original input, then that date is also valid. But if either the days, months, or years don't match, the input date was invalid.

These three routines make date manipulation easier in your programs by converting to a simpler value—a single number. Besides convenience, you also save storage space, since a date can be saved as a single number, instead of three numbers.

BI.17.2.BAS

```
160  100 def fn t2(v)=sqr(1-(v*v)/(186300*186
     300))
135  110 input"speed in miles per second";x
235  120 print "one week travelling at "x" mi
     les per second is"fn t2(x)*7"days"
194  130 goto 110
```

Constant Time?

In conclusion, I'd just like to leave you with a thought about time and its constancy. The BI.17.2.BAS routine shows an interesting time effect. Einstein predicted that time would shorten as one travelled faster—the previous formula is the calculation for his theory. Given the velocity V (in miles per second), the program shows the amount of time a week's travel would compress into. The 'Twins paradox' illustrates the effect. One of a pair of twins blasts off in a spaceship flying near the speed of light; the other stays home. When the twin returns, the one who stayed behind is visibly older. At higher speeds, time slows down, as this formula describes. Just a reminder that even that most constant factor—time—isn't constant at all.

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CHECKSUM

Commodore World's Program Entry Checking Program and Tips on Entering Programs from this Magazine

CHECKSUM is a program that proofreads your typing when you enter a listing from the magazine. It assigns a numerical value to each character that you type, adds up the values of the line you typed and displays the sum. (Checksum, therefore, means that it checks your typing by summing the characters.) It also verifies that you have typed the characters in the proper order. (Checksum won't tell you if you miss a line of code entirely, so verify that yourself.) Checksum runs "in the background" when you type in lines of program code. Whenever you type a line and press RETURN, Checksum will display a value. Compare that value to the value published next to the line of code in the magazine. If the numbers match, you've typed the line correctly. Simple.

Typing in CHECKSUM

First, type in Checksum carefully from the listing on this page. Be sure to press RETURN after every line to enter it into memory. Once you have typed the program, *save it*. In fact, save it a few times while you're typing, just to be safe. (This is good advice whenever you type in a program. I usually change the name each time I save; for example, Checksum1, Checksum2, and so on.) Double-check your work, making sure that you've typed in every line and that you've pressed RETURN after every line you've typed. If you make errors when typing in Checksum, a test run of Checksum will tell you which line is incorrect. (This safety feature works only in the Checksum program itself, and does not apply to any other listings in the magazine.) Whenever you find a typing error (in any program listing), fix it, press RETURN to enter the change, save the program again and try another run. Repeat this process as often as necessary. Important tip: Don't get discouraged if the program won't run. Be patient. Be thorough. It will work eventually. You'll know your Checksum is ready when you see the line:

```
TO TOGGLE ON OR OFF, SYS XXXX
```

Entering Programs Using CHECKSUM

When you're ready to type in your first listing from the magazine, load and run Checksum. Make a note of the number that is displayed on the screen (49152 for the C-64; 3328 for the C-128). To activate and deactivate Checksum, type SYS followed by that number, then press RETURN. You need to have Checksum active whenever you're typing in a listing. Checksum must be deactivated, however, when you run the new program. The next step is typing in a new program listing as it appears in the magazine.

As you begin, you'll notice that to the left of the start of each line is a number. Don't type this number in: It's simply the Checksum value. Stop typing at the end of the program line and press RETURN. If you've typed the line correctly, the number displayed on the screen will match the Checksum value. If the numbers don't match, you've made a mistake. Check the line carefully, make your changes and press RETURN. The computer won't know you've made a change unless you press RETURN on the changed line to enter it. A few type-in hints: The Checksum does not verify blank spaces in the program lines unless they are within quotation marks, because adding or omitting such spaces will not affect the operation of the program. The exception to this is hexadecimal Data statements. These are the Data statements, such as this one, that don't have commas:

```
100 DATA 1234567890123456789O*123456789012345
67890*12345678901234567890*
```

In statements such as these, you must have one space between the word DATA and the numbers that follow. Checksum will not catch that error.

Special Key Combinations

As you type, you may be confused the first time you see curly braces {}. These braces mean "perform the function explained within." For example, {22 SPACES} means that you need to press the space bar 22 times. Don't type the braces (you can't, of course, because there are no curly braces in the Commodore character set). Here are some other common examples:

{CLEAR/HOME}	hold down the SHIFT key and press the CLR-HOME key.
{2 CRSR DN}	tap the cursor down key twice.
{CTRL i}	hold the CONTOL key and press the I key.
{CMDR t}	hold down the COMMODORE key and press the T key.

Continue typing in your program, saving often and checking each checksum value with the one in the magazine, until you've finished the listing. Phew! So now you're ready to run your program, right? Not quite. First, save it. Second, deactivate Checksum by typing SYS followed by 49152 for the C-64 or 3328 for the C-128. Now you can run. Don't be discouraged if you still get an error. It happens. Use Checksum faithfully. Be patient. Be thorough. It will work eventually.

CHECKSUM

```
100 rem cw checksum 64/128
110 mo=128:sa=3328
120 if peek(65533)<>255 then mo=64:sa=49152
130 i=0:ck=0:ch=0:ln=300
140 for k=0 to 16
150 for j=1 to 10
160 read b:if b>255 then goto 280
170 ch=ch+b:poke sa+i,b:i=i+1
180 next j
190 read lc:if lc<>ch then goto 280
200 ch=0:ln=ln+10
210 next k
220 pokesa+110,240:pokesa+111,38:pokesa+140,234
230 printchr$(147):print"cw checksum";str$(mo):print
240 print"to toggle on or off, sys";sa:if mo=128 then 270
250 pokesa+13,124:pokesa+15,165:pokesa+25,124:pokesa+26,165
260 pokesa+39,20:pokesa+41,21:pokesa+123,205:pokesa+124,189
270 pokesa+4,int(sa/256):sys sa:new
280 print"you have a data error in line";ln;"!":end
290 rem do not change these data statements!
300 data 120,162,24,160,13,173,4,3,201,24,884
310 data 208,4,162,13,160,67,142,4,3,140,903
320 data 5,3,88,96,32,13,67,152,72,169,697
330 data 0,141,0,255,133,176,133,180,166,22,1206
340 data 164,23,134,167,132,166,170,189,0,2,1149
350 data 240,58,201,48,144,7,201,58,176,3,1136
360 data 232,208,240,189,0,2,240,42,201,32,1386
370 data 208,4,164,180,240,31,201,34,208,6,1276
380 data 165,180,73,1,133,180,230,176,164,176,1478
390 data 165,167,24,125,0,2,133,167,165,168,1116
400 data 105,0,133,168,136,208,239,232,208,209,1638
410 data 169,42,32,210,255,165,167,69,168,170,1447
420 data 169,0,32,50,142,169,32,32,210,255,1091
430 data 32,210,255,169,13,32,210,255,104,168,1448
440 data 96,104,170,24,32,240,255,104,168,96,1289
450 data 56,32,240,255,138,72,152,72,24,162,1203
460 data 0,160,0,32,240,255,169,18,208,198,1280
```


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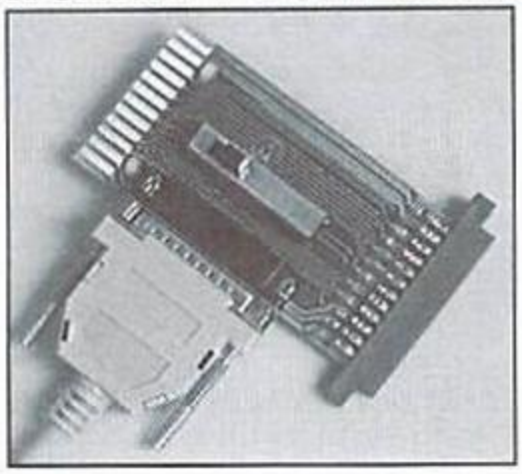

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Over The Edge...

By Harold Stevens, Jr.

WARNING: COMPUTING CAN BE HAZARDOUS TO YOUR HEALTH

"Hi, I'm Harold and I'm a computerholic."

How do I know I'm a computerholic? I found out the hard way several months ago when I had to go almost a week without using my Commodore 64C while we moved from a cramped one-bedroom apartment into a spacious two-bedroom luxury townhouse. I almost died in the process. Do you know what it is like to go almost a week without using a computer? It's horrible, I wouldn't wish on anyone. You wouldn't believe the anguish I suffered when I wasn't able boot up GEOS, cruise the Internet, or fulfill my duties as a Genie Commodore Roundtable Conference host.

It all started when we were packing to move to the new apartment... Just about everything was in boxes except for the things on and around my computer desk. Then my wife, Chris, asked if I was ready to start boxing my computer.

"No, I'm not ready to start packing away my computer," I told her. "You know it will be the last thing I put away."

"Harold, you are going to get the rental truck tomorrow, you might as well get started," she said while handing me some empty boxes.

The number one rule when you pack is throw, sell, or give away everything you don't need. That rule doesn't apply to my beloved computer. I started going through the desk drawers that have become a cemetery for the peripherals I no longer use. I found several chips (I couldn't remember what they were for), a fastload cartridge, an extra REU, a cleaning kit for a long dead and gone mouse, and miles of cables and wires. Did I throw it out? Are you nuts? Of course not! You never know when this stuff could come in handy again.

I didn't have the time or energy to use the computer as we started moving some of the small items by car to the new apartment. We carried boxes by hand down three flights of stairs to the car, and redeposited them at the new place.

Then came the terrifying moment that I had been dreading all week... dismantling the computer. My wife had pity on me and told me to go ahead and log on to Genie to bug my co-host, Max Cottrell (aka MC.PHOTO), and let him know I was still alive despite being cut off from the computer. Of course, my better half wanted to put in her appearance in the Commodore RT to chat with the girls, but I put my foot down and told her to find something to pack.

After I logged off, I began the dreaded work of slowly dismantling my computer. The keyboard, disk drives, monitor, modem, and RAMLink were cleaned and put in the original boxes. For the first time in nine years, my computer desk stood empty (except for dust). I thought I was about to go into convulsion. Instead, I went to sleep.

The next day, my brother and I carried the furniture down to the rental truck, but not my computer equipment. No-o-o-o! My precious little baby was going to its new home in the back seat of the car with the seat belts wrapped around it, making it nice and secure.

Chris rolled her eyes when she saw this. "I swear you treat your computer better than you do me at times," she said, getting into the car.

I asked myself, "Do I treat the computer better than my wife? Nah, I don't think so." After all, I've never bought the computer a big diamond ring, expensive dresses, or took it to the beach for a vacation.

The next day, after moving everything into the new apartment, I set up my new computer room. The computer no longer had to share space between the living and dining rooms. To this day, Chris swears she has never seen me move so fast. I took off up the stairs and started putting everything back together in the spare bedroom that became my office. Slowly and methodically, each peripheral was hooked back up to the computer. Then, came the magic moment. I threw on the switch and the C64 came back to life. "It's alive!" I shouted, with my wife nearby shaking her head. I set up my RAMLink partitions and reloaded all of the files. I was ready to start kicking hind ends in the computer world.

I was ready to start checking my Email-boxes, the Internet and Genie, when my wife commandeered the computer while my back was turned, and booted up her favorite Solitaire game. "You can get started down in the basement unpacking things while I relax for a while," she said. *Arugh!* I had to have my 'puter!

It was then I realized that I was a computerholic. All the signs were there, but I chose to ignore them. Yeah, I have seen several of my computer buddies' families break up because of their compulsion with their computers, but I wasn't like them. I had the will power to say "No!" Didn't I?

I found a cure in the form of another hobby I used to engage in before I became hooked on computers—small scale modeling. I went to the basement and began unpacking. I found dozens and dozens of models I had stored while we lived in the one-bedroom apartment. Within a week, I was down in my basement workshop putting all the old Star Trek and space craft models together.

Soon, I was only using my C64 when I needed it for work, checking Email, and hosting the Genie Commodore RTC on Friday nights. The smell of styrene plastic, model cement and paint were wafting through the basement. The models took hold of my spare time in the evenings, on the weekends, and holidays. I had returned to the old favorite from my pre-computer life.

"Hi, I'm Harold and I'm a scale model addict."

Harold Stevens, Jr. is an avid Commodore 64 and GEOS user and is the Friday night Commodore 64 Roundtable Conference (RTC) host on Genie. His internet address is hstevens@freenet.columbus.oh.us

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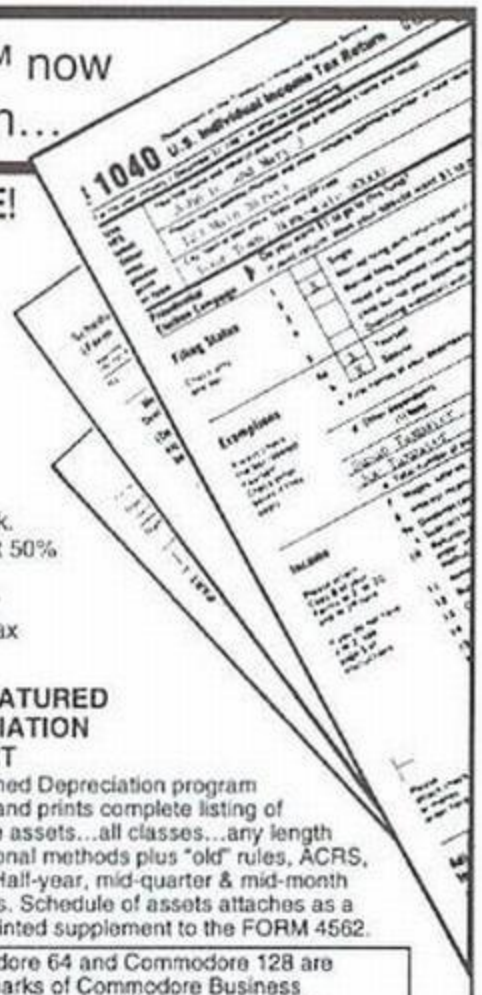

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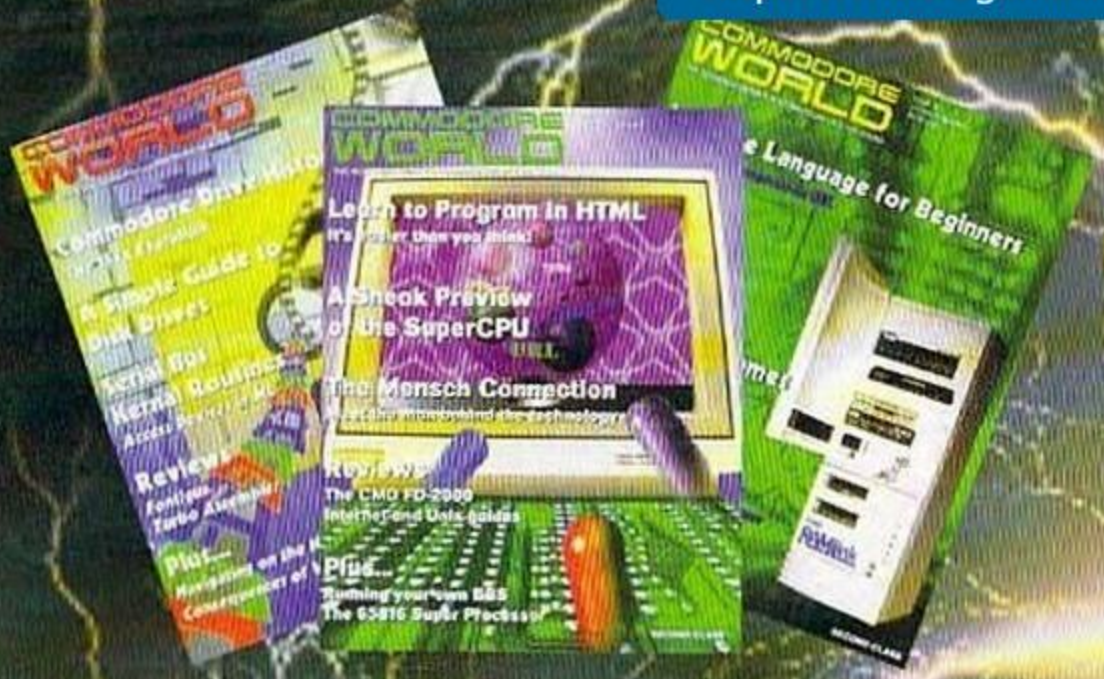

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